NOVEMBER 6-8, 2025

AOMC

23RD ASIAN AND OCEANIAN MYOLOGY CENTER MEETING

AGA KHAN UNIVERSITY, KARACHI, PAKISTAN

Beyond Borders Virtual Gathering

PROGRAMME AND ABSTRACT BOOK

CONTENTS

Welcome Message from the **Chair, AOMC 2025**

It is our great pleasure to invite you to attend 23rd Annual Meeting of the Asian Oceanian Myology Centre to be held online, hosted by Aga Khan University, Karachi, Pakistan, from 6th to 8th of November 2025. This is a premier conference dedicated to advancing knowledge and collaboration in the field of muscle and nerve disorders. This conference brings together leading experts, researchers, and clinicians from across the region and beyond to share the latest developments, innovative research, and clinical advancements in myology.

With a diverse programme featuring keynote presentations, interactive sessions and clinicopathological sessions we aim to foster meaningful dialogue, inspire new ideas, and strengthen partnerships that will drive progress in the diagnosis, treatment, and care of neuromuscular disorders.

About AOMC:

Established in January 2001, AOMC emerged from the collective endeavors of founding members hailing from 11 countries and regions. Since its inception, AOMC has been steadfast in its mission to elevate the standards of neuromuscular care. It is dedicated to promoting research, education, and clinical excellence in the field of neuromuscular medicine. From promoting cutting-edge research to offering educational opportunities for emerging investigators and clinicians, AOMC has stood as a beacon of progress and collaboration. AOMC welcomes all professionals working in the neuromuscular field, fostering a multidisciplinary approach that enriches the study of neuromuscular disorders and the care of those affected.

We invite you to engage, learn, and contribute your research, as we work together to improve the lives of individuals affected by these neuromuscular disorders. Thank you for joining us, and we look forward to an enriching and memorable conference experience!

Objectives:

- To discuss basic principles of clinical evaluation of neuromuscular disorders.
- Review of findings of muscle pathology in different neuromuscular disorders.
- Updates on treatment and management of specific neuromuscular disorders.
- Updates on ongoing research in the field of neuromuscular diseases.

Who should attend?
Neurologists, Neuropathologists, Clinicians, Students and Trainees
Best Wishes

Dr. Sara Khan
Conference Chair of AOMC 2025

Welcome Message from the **President of AOMC**

It is my great pleasure to welcome you to the Annual Scientific Meeting of the Asian-Oceanian Myology Centre (AOMC), held this year in Karachi, Pakistan.

This meeting marks a particularly memorable milestone: the 25th anniversary of AOMC. Established in 2001, when myologists from 11 countries and regions gathered in Tokyo, AOMC has grown steadily over the years. Today, we are proud to have 18 full members and 1 member elect, reflecting the remarkable expansion of our community.

Over the past quarter of a century, myology in the Asian-Oceanian region has advanced tremendously. These achievements are the result of the dedication, perseverance, and teamwork of many colleagues across our region. At the same time, such progress has been made possible by broader factors such as economic development and social stability, which create the foundations upon which scientific and clinical advances can flourish.

Although this year's AOMC is being held online due to the circumstances, our collective spirit and commitment remain undiminished. We remain confident in the bright future of myology. In the years ahead, there is no doubt that more and more muscle diseases will become treatable, and we believe firmly that our region will play an essential role at every level–from basic science to clinical application–in the development of these new therapies.

On this special occasion, I warmly thank all of you for your commitment and contributions to our shared mission. Let us continue to work together to ensure that AOMC grows even stronger in the next 25 years, serving as a driving force for progress in myology across Asia and Oceania.

Ichizo Nishino, MD, PhD
President, Asian-Oceanian Myology Center (AOMC)

Organization

- Organized by Asian Oceanian Myology Center (AOMC)
- Hosted by The Aga Khan University, Pakistan
- Supported by Pakistan Society of Neurology, and Neuroscience Interest Group (NSIG)

Dr Sara Khan, Chair Organizing Committee, AOMC 2025

SCIENTIFIC COMMITTEE:

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Dr Tahseen Mozaffer, USA
Dr Ichizo Nishino, Japan
Dr Mohammed Wasay, Pakistan
Dr Arsalan Ahmed, Pakistan
Dr Salman Bhai, USA

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Dr Katsuhisa Ogata, National Hospital Organization Higashisaitama Hospital, Japan
Dr Khean-Jin Goh, University of Malaya, Kuala Lumpur, Malaysia.
Dr Maimoona Siddiqui, Shifa International Hospital, Pakistan
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Dr Muhammad Hassan, Allama Iqbal Memorial Hospital, Gujranwala, Pakistan
Dr Ohnmar, Mandalay General Hospital, Myanmar
Dr Sajid Hameed , Aga Khan University, Pakistan
Dr Sara Khan, Aga Khan University, Pakistan
Dr Shahid Mustafa, Aga Khan University, Pakistan
Dr Shanawer Khan, Aga Khan University, Pakistan
Dr Tipu Sultan Malik, The Children's Hospital and the Institute of Child Health, Pakistan
Dr Waleed Shahzad, Capital Development Authority Hospital, Pakistan
Dr Yung Tin Kuo, Shuang Ho Hospital, Taipei Medical University, Taiwan

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Mr. Haroon Rashid, Aga Khan University, Pakistan
Mr. Karim Anwerali, Aga Khan University, Pakistan
Mr. Manzoor Yaseeni, Aga Khan University, Pakistan
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AOMC 2025 Faculty

(In alphabetical order by last name)

Dr. Arsalan Ahmad is a Professor of Neurology and Consultant Neurologist at Shifa International Hospitals and Shifa Tameer-e-Millat University, Islamabad, and also serves as Chairman of the Institutional Review Board and Ethics Committee. He served as President of the Pakistan Society of Neurology from 2016 to 2018 and has been a member of the American Academy of Neurology (AAN) since 1994. His interests include neuromuscular diseases, neurogenetics, and rare neurological disorders. To date, he has 94 publications in national and international journals.

Fizza Akbar, MSc, is a genetic counsellor and a senior instructor at the Aga Khan University, Karachi. Her work is centered around clinical genetic counselling services and research across prenatal, paediatric, and adult settings, with a particular focus on oncology genetics. Her area of interest is to understand the genetic architecture of rare Mendelian disorders in the multi-ethnic Pakistani population and to advocate for the integration of genomics into mainstream medical practice. She has a Master's in Genomic Medicine from The University of Manchester and PGT certification in Genomic Counselling and Variant Interpretation from the University of British Columbia.

Dr. Yoshitsugu Aoki, MD, PhD, is a clinician–scientist and Research Director at the National Institute of Neuroscience, National Center of Neurology and Psychiatry (NCNP), Tokyo, where he leads the Department of Molecular Therapy and serves as a Consultant Neurologist. Trained at Tohoku University (MD, 2001) and Tokyo Medical and Dental University (PhD, 2011), he joined the University of Oxford in 2012 to work with Professor Matthew J. A. Wood on RNA-based therapeutics. His preclinical research contributed significantly to the approval of the exon 53-skipping drug viltolarsen, and he also led an exon 44-skipping clinical trial for Duchenne muscular dystrophy. The author of more than 115 publications, Dr. Aoki's work integrates molecular therapy, regenerative medicine, and precision disease modeling to advance treatments for rare neurological disorders.

Prof. Dr. Nalini Atchayaram is a Professor of Neurology and a Neuromuscular Specialist at the National Institute of Mental Health and Neurosciences (NIMHANS), Bengaluru, India. For the past three decades, she has been extensively involved in the clinical phenotyping and genotyping of inherited neuromuscular disorders.

Dr. Sophelia Chan is a Clinical Associate Professor of Pediatric Neurology at the University of Hong Kong. After graduating from the University of Hong Kong, she completed her pediatric fellowship and subspecialty training in pediatric neurology, followed by clinical and research fellowship training at the Dubowitz Neuromuscular Centre, Great Ormond Street Hospital, London. Dr. Chan has led several international clinical trials for spinal muscular atrophy and Duchenne muscular dystrophy. She serves as the academic lead for the Pediatric SMA Treatment Program in Hong Kong. Dr. Chan is an Executive Board Member of the Asian Oceanian Myology Centre (AOMC), a member of the Committee on Inclusion, Equity, and Diversity of the World Muscle Society, President of the Hong Kong Society of Neuromuscular Diseases, and a member of the editorial board of the journal *Neuromuscular Disorders*.

Dr. Josiah Chai is a Senior Consultant in the Department of Neurology at the National Neuroscience Institute (NNI), Singapore. He graduated in Medicine from the National University of Singapore and completed his Advanced Specialty Training in Neurology before joining NNI in 2000. Dr. Chai pursued a fellowship in Neuromuscular Medicine at the University of Rochester Neuromuscular Center in New York.
His clinical and research interests focus on neuromuscular disorders and motor neuron diseases. He heads the NNI Neuromuscular Laboratory and serves as Programme Director for the NNI Motor Neuron Disease and Neuromuscular Disorders Programme.
A dedicated educator, Dr. Chai holds teaching appointments as Adjunct Associate Professor at the Lee Kong Chian School of Medicine, Adjunct Assistant Professor at Duke-NUS Graduate Medical School, and Senior Clinical Lecturer at the Yong Loo Lin School of Medicine.

Dr. Habib Ul Rahman Habib joined the AKU Neurology Residency Program in 2016. After completing his training, he joined the French Medical Institute for Mothers and Children (FMIC) in Afghanistan — the country's only neurology unit. He is strongly committed to expanding neurological care across this nation of 40 million people.

Dr. Ali A. Habib is a board-certified neurologist and neuromuscular disorders specialist. He earned his medical degree from the Aga Khan University, Karachi, Pakistan. He completed his internal medicine internship and neurology residency at NewYork-Presbyterian/Weill Cornell Medical Center, New York, followed by fellowships in clinical neurophysiology at NewYork-Presbyterian/Columbia University Medical Center and in amyotrophic lateral sclerosis (ALS) and related disorders at the Eleanor & Lou Gehrig ALS Center, Columbia University, New York. Dr. Habib's primary research interest is in myasthenia gravis (MG), and he has served as site and lead investigator in several pivotal trials of novel therapies for MG. He also has extensive experience in the clinical management of other neuromuscular disorders, including ALS, muscle diseases, and neuropathies.

Dr. Altynshash Jaxybayeva is a pediatric neurologist with over 20 years of clinical experience in Kazakhstan. She served as the Head Pediatric Neurologist for the Ministry of Health for 15 years and, since 2018, has been the President of the Society of Pediatric Neurologists, Neurophysiologists, Psychiatrists, and Psychotherapists. She is currently a leading consultant at the National Center for Children's Rehabilitation and the Center of Molecular Medicine in Almaty.
Dr. Jaxybayeva graduated from Almaty Medical University in 1996 and has received advanced training at the University of Tor Vergata (Italy), Columbia University (USA), the University of Cambridge (UK), and the National Center of Neurology and Psychiatry (Japan).

Dr. S. V. Khadilkar is a Professor and Head of the Department of Neurology, and Dean of the Medical Faculty at the Bombay Hospital Institute of Medical

Sciences, Mumbai. He has held several leadership positions, including President of the Indian Academy of Neurology (2018–19), the Nerve and Muscle Society of India (2018–19), and the Maharashtra Association of Neurology (2013). He currently serves as Secretary of the Asian Oceanian Myology Center and as Trustee and Secretary of the Muscular Dystrophy Society of Mumbai. A Fellow of the Royal College of Physicians (London) and several Indian medical academies, Dr. Khadilkar has authored eight books, 57 book chapters, and over 250 publications in national and international journals. A distinguished teacher and examiner for DM Neurology, he has received multiple Best Teacher Awards, including those from the Association of Physicians of India and Grant Medical College.

Dr. Ehtesham Khalid is a neurologist specializing in neuromuscular medicine and autonomic disorders. He completed his medical education at Nishtar Medical University and received advanced neurology training in Pakistan, Saudi Arabia, the United Kingdom, and the United States, including a fellowship in neuromuscular medicine at Vanderbilt University.
He currently serves as Section Head of Neuromuscular Medicine, Director of the Autonomic Laboratory, and Neurology Clerkship Director at the Ochsner Clinic Foundation. A dedicated educator and researcher, Dr. Khalid has received multiple teaching awards, published extensively, contributed to major neurology textbooks, and led international clinical trials in CIDP.

Dr. Sara Khan is an Associate Professor and Section Head of Neurology at the Aga Khan University, Karachi, Pakistan. She completed her Neurology and Neuromuscular Medicine training at the Cleveland Clinic, Cleveland, Ohio. Her research focuses on the prevalence, characteristics, and spectrum of neuromuscular disorders in Pakistan, with numerous publications in this field. She established the country's first Neuromuscular Fellowship Program and serves as its inaugural Program Director. Dr. Khan leads several national initiatives, including the first registries for Spinal Muscular Atrophy and Duchenne Muscular Dystrophy in Pakistan. Her long-term goals include improving diagnostic capabilities, increasing public awareness, and expanding access to emerging therapies for hereditary neuromuscular disorders.

Dr. Yuebing Li has published more than 140 articles in neuromuscular medicine and neurology and has received numerous teaching awards, including the Neurology Teacher of the Year Award at the Cleveland Clinic in 2014, 2019, 2020, and 2024. He has also been listed among the Best Doctors in America from 2007 to 2022. In 2020, he received the Scientific Impact Award from the American Association of Neuromuscular and Electrodiagnostic Medicine (AANEM). Dr. Li serves on the editorial boards of Muscle & Nerve and RRNMf Neuromuscular Medicine and has been an ad hoc reviewer for more than 50 journals.

Dr. Tahseen Mozaffar is Professor of Neurology and Pathology & Laboratory Medicine and Director of the Division of Neuromuscular Disorders at the University of California, Irvine. He also serves as Associate Director for the Center for Translational Sciences Award (CTSA) and Principal Investigator for UCI-NEXT, the NeuroNEXT site funded by the NINDS/NIH. Additionally, he leads the NIH/NIAMS-funded INSPIRE-IBM Natural History Study on sporadic inclusion body myositis.

A graduate of the Aga Khan University, Karachi, Dr. Mozaffar completed his Neurology and Neuromuscular training at Washington University in St. Louis. Since joining UC Irvine in 2000, he has established an internationally recognized clinical and research program in neuromuscular disorders.

He has authored over 190 peer-reviewed publications, multiple book chapters, and leads numerous clinical trials in myasthenia gravis and rare myopathies. He is also the founding director of the Annual UC Irvine Neuromuscular and Neuromuscular Pathology Colloquia.

Dr. Kalpana Prasad is a Senior Consultant Neurologist at National Neuroscience Institute, Singapore.

Dr Prasad obtained MBBS and Doctor of Medicine (General Medicine) degrees from India. She is a Member of the Royal Colleges of Physicians (UK). She did Specialist Training in Neurology at National Neuroscience Institute, Singapore and Fellowship in Neuromuscular Medicine at Johns Hopkins University School of Medicine, Maryland, USA.

Her subspeciality interests are neuromuscular disorders, electrodiagnosis and muscle biopsy.

Miriam Rodrigues is a research genetic counsellor and curator of Pūnaha Iō, the New Zealand Neurogenetic Registry and Biobank. She is the Chair of the TREAT-NMD Global Registry Network and has witnessed the positive impact of patient registries in advancing access to new therapies for individuals with rare diseases.

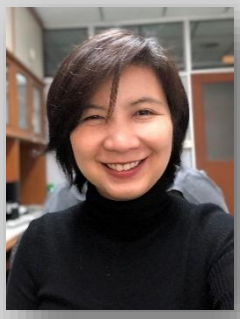
Dr. Raymond L. Rosales is a Full Professor of Neurosciences, Academic Researcher, and Journal Editor at the University of Santo Tomas in Manila, Philippines. He is a former President of the Asian Oceanian Myology Center (AOMC), the Philippine Neurological Association, the Movement Disorders Society of the Philippines, and the Philippine Society of Neurorehabilitation. His current author H-index is 42.

Dr. Naila Shahbaz is a Meritorious Professor of Neurology, working at Dow University of Health Sciences, Karachi. She is also, the current President of the Pakistan Society of Neurology

Dr. Jinhong Shin is an Associate professor at Pusan National University Yangsan Hospital, South Korea. An expert in neuromuscular disorders with special interest in the translational research of genetic myopathies. He is leading a clinical study for the therapeutic development of GNE myopathy. He has been involved in the pivotal clinical trials of Duchenne muscular dystrophy, spinal muscular dystrophy, and amyotrophic lateral sclerosis.

Professor Dr. Bashir A. Soomro has been an academic teacher, supervisor, and clinician in the field of neurology for over three decades, serving in Karachi, Pakistan.

Dr. Tipu Sultans is the Program Director of Pediatric Neurology at the Children's Hospital, Lahore. A leading figure in the field, he has authored over 100 publications and book chapters and is recognized as a pioneer in introducing plasma exchange (PLEX) and genetics in child neurology in Pakistan.
His contributions have been honored internationally, including the D'Souza Award by the VNS (USA) and the Neurology Advocacy Award by the Pakistan Society of Neurology (PSN).

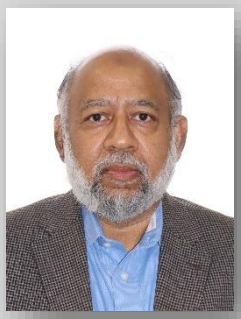


Dr. Jantima Tanboon is an Associate Professor of Anatomical Pathology at Siriraj Hospital, Mahidol University, Thailand. She was a research student and postdoctoral research fellow in the Department of Neuromuscular Research at the National Center of Neurology and Psychiatry (NCNP), Japan, under the supervision of Dr. Satoru Noguchi and Dr. Ichizo Nishino, where she developed a deep passion for neuromuscular research. Dr. Tanboon is one of the few specialists in Thailand responsible for muscle biopsy diagnosis.

Dr. Jinny Tavee is a Professor of Medicine and Chief of Neurology at National Jewish Health. A neuromuscular specialist with a focused interest in neurosarcoidosis, she is currently involved in research on sarcoidosis-related small fiber neuropathy. Dr. Tavee has also collaborated with international multidisciplinary consortiums to develop diagnostic criteria for neurosarcoidosis for both research and clinical practice. More recently, she has served as Principal Investigator or Co-Investigator in studies identifying novel biomarkers for peripheral and central neurosarcoidosis and was awarded a Milken Foundation grant in 2023 for a metabolomics study on sarcoidosis neuropathy.

Prof. Dr. Wong Kum Thong (MBBS, MPath, FRCPath, MD, FaSc) was trained in diagnostic anatomic pathology and is a senior consultant at the University of Malaya Medical Centre, Kuala Lumpur, Malaysia. He has a special interest in neuropathology including myology, and infectious disease pathology. As an active researcher, he has published more than 180 peer-reviewed papers including in the New England Journal of Medicine, Lancet, American Journal of Pathology, Journal of Virology, Neuropathology and Experimental Neurology and Neuropathology and Applied Neurobiology, etc. To date, he has more than 5200 citations and an ISI H-index of 35 in the Web of Science. He enjoys teaching and provides classes to medical and postgraduate students including anatomic and forensic pathology students, and neurosurgery trainees.

Dr. Andoni Urtizberea is a clinical myologist, certified in Pediatrics and Rehabilitation Medicine. He serves as Head of the AcadeMYO Program at the Institut de Myologie in Paris, France, and is a former Scientific Director of the European Neuromuscular Centre (ENMC). Dr. Urtizberea is also the Founder and President of Myologie Sans Frontières, a humanitarian organization dedicated to advancing muscle science and care worldwide. His work focuses on education, collaboration, and the global development of neuromuscular medicine.

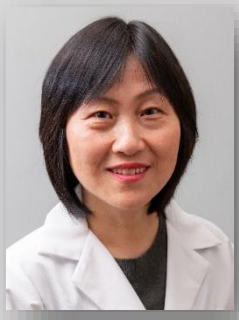


Dr. Mohammad Wasay is a Professor of Neurology at the Aga Khan University, Karachi. He is a Fellow of the Royal College of Physicians, the World Academy of Sciences, the American Academy of Neurology, and the European Academy of Neurology. A distinguished clinician, researcher, and educator, Dr. Wasay has made significant contributions to the advancement of neurological sciences in Pakistan and internationally.

Dr. Hui Xiong is the Director of the Department of Neurology at Beijing Children's Hospital and Professor of Pediatric Neurology at Capital Medical University, China. A physician-scientist dedicated to translational research, her work focuses on elucidating pathogenic mechanisms and developing molecular therapies for genetic neuromuscular disorders. She leads multiple clinical trials, natural history studies, and a genomics platform for congenital muscular dystrophies.
Her laboratory develops novel mouse models and identifies therapeutic targets for early-onset muscular

dystrophies. A strong advocate for children and families affected by rare diseases, Dr. Xiong has authored over 100 peer-reviewed publications supported by major national research grants.

Dr. Chuanzhu Yan is Professor of Neurology and Director of the Neuromuscular Center and the Shandong Key Laboratory of Mitochondrial Medicine and Rare Diseases at Qilu Hospital, Shandong University, China. He currently serves as President of the Chinese Society of Neuromuscular Disorders, Chair of the Neurological Rare Diseases Board in the China Alliance for Rare Diseases, Vice President of the Chinese Society of Neurology, and a board member of the Asian Oceanian Myology Center (AOMC).
Dr. Yan's research focuses on neurogenetics and neuromuscular disorders, particularly metabolic and inflammatory myopathies. He has authored multiple book chapters and over 150 publications in the field.



Dr. Lan Zhou is Neurologist-in-Chief and Chair of the Marcia Dunn and Jonathan Sobel Department of Neurology at the Hospital for Special Surgery, USA. She specializes in neuromuscular diseases, with clinical expertise in small fiber neuropathy, inflammatory myopathies, myasthenia gravis, and neuromuscular pathology.
Dr. Zhou earned her medical degree from Shanghai Medical University (now Fudan University) and her PhD in developmental biology from the University of Cincinnati. Before joining HSS, she held faculty positions at the Cleveland Clinic, Mount Sinai, UT Southwestern, and Boston University School of Medicine.
An NIH-funded investigator, Dr. Zhou leads research on muscle inflammation, fibrosis, and regeneration, and has authored numerous publications and the textbook *A Case-Based Guide in Neuromuscular Pathology*.

MEETING AGENDA

Thursday, 6th November

PRE-CONFERENCE WORKSHOP-1

Clinical Approach to Neuromuscular Disorders

9:00am - 12:10pm

Chairs: Dr Omer Suhaib (Pakistan) / Dr Bashir Soomro (Pakistan)
Dr Altynshash Jaxybayeva (Kazakhstan)

PROGRAMME		
9:00am- 9:10 am	Introduction	
9:10am-9:50am	Clinical clues to differentiate hereditary from acquired NMD	Dr. Shahriar Nafissi (Iran)
9:50am-10:30am	Approach to recognizing clinical patterns of hereditary muscle disorders	Dr. Satish Khadilkar (India)
10:30am-10:40am	Brain Break	
10:40am-11:20 am	Clinical characteristics of peripheral neuropathies (hereditary and acquired)	Dr. Umapathi Thirugnanam (Singapore)
11:20am-12:00 pm	Approach to hereditary neuromuscular junction disorders	Dr. Atchayaram Nalini (India)
12:00am-12:10 pm	Questions and Answers and Conclusion	

Thursday, 6th November

PRE-CONFERENCE WORKSHOP-2

Understanding Muscle Pathology- A Beginners Guide

2:00pm - 5:00pm

Chairs: Dr Aisha Memon (Pakistan) / Dr Kum Thong Wong (Malaysia)

PROGRAMME		
2:00 pm-2:10 pm	Introduction	
2:10 – 3:10 pm	Basics of reading muscle pathology	Dr. Kalpana Prasad (Singapore)
3:10-3:20 pm	Brain Break	
3:20 pm- 4:20 pm	Muscle pathology patterns of common NMD	Dr. Lan Zhou (U.S.A)
4:20- 5:00 pm	Questions and Answers and Conclusion	

Thursday, 6th November

6:00pm - 7:00pm **Executive Board Meeting**

Conference Programme

Day 1: Friday, 7th November

9:00am - 9:30am	**WELCOME** • Welcome Note - Dr Sara Khan, Chair Organizing Committee, AOMC 2025 • Welcome Address- Dr Ichizo Nishino, President AOMC • Welcome Note- President Pakistan Society of Neurology **OPENING SESSION** Chairs: Dr Naila Shahbaz, Dr Raymond Rosales
9:30am - 10:10am	**Keynote Address-I:** Neuromuscular Manifestations of Multisystem Proteinopathy Dr Tahseen Mozaffar
10:10am - 10:50am	**Keynote Address-II:** GNE Myopathy- Emerging Insights and Future Directions Dr Ichizo Nishino
10:50am - 11:00am	Question and Answers
11:00am - 11:20am	**Poster Viewing Session** **SESSION 1:** Chairs: Dr Khairunnisa Mukhtiars and Dr Fizza Akbar
11:20am - 11:50am	Evaluation Long term outcomes in patients with symptomatic Spinal Muscular Atrophy Dr Sophelia Chan
11:50am - 12:20pm	Advances in Exon Skipping Therapy Dr Yoshitsugu Aoki
12:20pm -12:50pm	New insight into Mitochondrial Myopathy Dr Chuanzhu Yan
12:50pm - 1:00pm	Questions and Answers
1:00pm - 1:30 pm	**Poster Viewing Session** Lunch Break **SESSION 2:** Chairs: Dr Tipu Sultan, Dr Jong-Hee Chae
2:00pm - 2:30pm	Insights into the Pathobiology and Treatment of Congenital Muscular Dystrophies Dr Hui Xiong
2:30pm - 3:00pm	Molecular basis of congenital myasthenic syndromes- implications for diagnosis and treatment Dr Hacer Durmus

3:00pm - 3:30pm	Therapeutic highlights in genetic myopathies Dr Jinhong Shin
3:30pm - 3:40pm	Questions and Answers
3:40pm - 4:20pm	**Poster Viewing Session** Tea Break
	SESSION 3: Chairs: Dr Mohammed Wasay, Dr Manfaluthy Hakim
4:20pm - 4:50pm	Effective Patient Registries - Insights from the TREAT NMD Global Registry Network Miriam Rodrigues
4:50pm - 5:20pm	Challenges in treating rare muscle diseases in resource limited settings Dr Andoni Urtizberea
5:20pm - 5:50pm	Updates from Pakistan and Afghanistan Dr Sara Khan and Dr Habib ur Rehman
5:50pm- 6:00pm	Questions and Answers
	END OF DAY ONE

Day 2: Saturday, 8th November

	SESSION 4: Chairs: Dr Josiah Chai, Dr Arsalan Ahmed
9:00am - 9:30am	Muscle Talks: Myositis and its Mimics Dr Salman Bhai
9:30am - 10:00am	Multifocal motor neuropathy Dr Yuebing Li
10:00am - 10:30am	Transforming Myasthenia Gravis: Trials, Therapies, and the New Clinical Era Dr Ali Habib
10:30am - 10:40am	Questions and Answers
10:40am - 11:20am	**Poster Viewing Session** Tea Break
	SESSION 5: Chairs: Dr Ehtesham Khalid, Dr Satish Khadilkars
11:20am - 11:50pm	Antisynthetase Syndrome Myopathy- Distinctive Features Across Antibody Subtypes Dr Jantima Tanboon
11:50pm - 12:20pm	Recognizing and Treating Neuropathy in Sarcoidosis: A Clinical Guide Dr Jinny Tavee

12:20pm - 12:50pm	Nerve and muscle involvement in Tuberculosis Dr Mohammed Wasay
2:50pm - 1:20pm	Role of AI in neuromuscular disorders Dr Andrew Kornberg
1:20pm - 1:30pm	Questions and Answers
1:30pm - 2:00pm	**CLOSING CEREMONY** • AOMC Flag Handover • AOMC 2026 Introduction by: Dr. Gina Ravenscroft (Australia) • Closing Remarks and Announcement of Poster Presentation Winners by Chair AOMC 2025

- END OF AOMC 2025 -

ABSTRACTS
(e-Poser Presentation)

EP01

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Ai Yamanaka

Co-Authors Names:
Satoru Noguchi, Rui Shimazaki, Shinichiro Hayashi, Kazuma Sugie, Ichizo Nishino

Authors' affiliations:
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Institute / Organisation:
Department of Neuromuscular Research, National Institute of Neuroscience, National Center of Neurology and Psychiatry, Tokyo, Japan

Abstract Theme:
Muscular Dystrophy

Abstract Title:
Stepwise Fat Replacement and Truncal Muscle Involvement in Sarcoglycanopathy Revealed by Whole-Body Imaging

Background
Sarcoglycanopathy is a group of autosomal recessive muscular dystrophies. Although limb muscle involvement has been well documented, the clinical relevance of truncal muscle involvement remains poorly understood. This study aimed to comprehensively characterize muscle involvement throughout the body, particularly focusing on truncal muscles, and to explore its relationship with clinical severity.
Methods
Whole-body CT or T1-weighted MRI images from 15 genetically confirmed sarcoglycanopathy patients (SGCA: n=9, SGCB: n=2, SGCG: n=4) were analyzed. Fat replacement in 43 skeletal muscles was scored using the modified Mercuri scale. Clinical data including age, disease duration and serum CK levels were collected. Immunohistochemistry (IHC) was performed on frozen muscle specimens to evaluate the expression of α-, β-, and γ-sarcoglycan on sarcolemma. Statistical analyses were performed using GraphPad Prism and R.
Results
Hierarchical clustering analysis stratified patients into mild, moderate, and severe groups. Violin plots demonstrated a stepwise progression of fat replacement, with abrupt transitions between severity levels. Notably, iliocostalis lumborum and longissimus differentiated mild from moderate cases, while subscapularis, latissimus dorsi, and abdominal muscles were predominantly affected in severe cases. Additionally, patients with complete sarcoglycan deficiency confirmed by IHC showed a more rapid progression of fat replacement compared to those with preserved sarcoglycan expression.
Conclusions
Whole-body imaging reveals a threshold-like pattern of muscle involvement, with abrupt transitions indicating shifts in disease severity. Truncal muscle involvement emerged as a hallmark of late-stage disease. These findings provide potential markers of disease progression and can assist in clinical decision-making and in optimizing the timing of therapeutic interventions. The Ethics Committee of the NCNP (approval number: A2022-045).

EP02

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Abstract Theme:
Myositis

Abstract Title:
The case of Anti-HMGCR myopathy in 10-year-old girl in Kazakhstan

Immune-mediated necrotizing myopathy (IMNM) is a subtype of autoimmune inflammatory myopathies characterized by prominent myofiber necrosis with minimal inflammatory infiltrate. Clinically, IMNM presents with predominantly proximal muscle weakness and markedly elevated serum creatine kinase (CK) levels; disease subsets are often associated with specific autoantibodies, most commonly anti–3-hydroxy-3-methylglutaryl-coenzyme A reductase (anti-HMGCR) and anti–signal recognition particle

(anti-SRP). Definitive diagnosis integrates the clinical picture, laboratory findings (notably hyperCKemia), serologic detection of disease-specific autoantibodies, muscle magnetic resonance imaging, electromyography, and histopathology, which reveals myofiber necrosis and regeneration with scant inflammatory cells. Delayed diagnosis is common, owing to considerable clinico-pathological overlap between IMNM and hereditary myopathies.
The first case of anti-HMGCR–positive IMNM identified in Kazakhstan in a 10-year-old child. The patient had exhibited progressive muscle weakness and myalgias since age three, with CK elevations reaching 4 000 U/L over time. Electroneuromyography demonstrated myopathic changes, while genetic testing for hereditary myopathies and anti-SRP serology were negative, excluding SRP-positive IMNM. Seven years after symptom onset, anti-HMGCR antibody testing—performed abroad due to local unavailability—revealed a high titer of 440.4 U/mL. Muscle biopsy exhibited marked fiber size variation, evidence of both hypertrophy and atrophy, centrally located nuclei in some fibers, necrosis with phagocytosis, and lipid accumulation; oxidative enzyme stains (NADH, SDH, COX) and phosphorylase staining confirmed features of chronic necrotizing myopathy.
Given the rarity of anti-HMGCR myopathy and the lack of local diagnostic resources, the diagnostic process was protracted. The patient was treated with intravenous immunoglobulin and rituximab, resulting in a reduction of CK to 900 U/L within three weeks, although no appreciable clinical improvement has yet been observed. Optimal management strategies for IMNM remain undefined, and therapeutic regimens vary widely in practice. Nevertheless, evidence suggests that anti-HMGCR–positive IMNM frequently responds to IVIG and/or rituximab. Further studies are required to establish evidence-based guidelines for management of this myopathy.

EP03

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Abstract Theme:
Myasthenia Gravis

Abstract Title:
Respiratory Muscle Therapy in Myasthenia Gravis: A systematic review

Background
Myasthenia Gravis (MG) is a chronic autoimmune neuromuscular disorder marked by fluctuating skeletal muscle weakness, including respiratory muscles. Respiratory complications are a major cause of morbidity and mortality. While pharmacological treatments remain central, supportive therapies like Respiratory Muscle Therapy (RMT) show potential to improve respiratory outcomes and reduce complications.
Methods
A systematic search was conducted across PubMed, Embase, Scopus, Web of Science, and Cochrane Library for studies published up to June 2025. Included studies were randomized controlled trials, cohorts, and multicenter trials evaluating RMT in MG patients. Primary outcomes were changes in respiratory muscle strength (maximum inspiratory pressure [MIP], maximum expiratory pressure [MEP]) and pulmonary function (FVC, FEV1, vital capacity, PEF), along with clinical metrics such as 6-minute walk distance. Study quality was assessed using the Cochrane Risk of Bias Tool (ROB 1).
Results
Seven studies were included, totaling 327 patients with mild to severe MG. RMT interventions lasted 4–12 weeks, with three studies using 8-week protocols. Controls varied: 2 studies compared RMT to standard care, 2 to chest physiotherapy, 2 to no RMT, and 1 used inspiratory muscle training alone. MIP improved significantly in five studies, with gains of +56.6 to +105.6 cm H_2O. FVC and FEV1 increased in four studies by 7%–18% of predicted values. No significant change was observed in vital capacity. The 6-minute walk distance improved by 35–90 meters. No serious adverse events were reported, and adherence ranged from 82% to 96%. Studies with

interventions longer than 10 weeks showed similar benefits.

Conclusion

RMT appears to be a safe and effective adjunct in MG management, enhancing respiratory strength and physical capacity. However, variability in study design and outcome measures limits pooled analysis. Standardized protocols and larger trials are needed to guide clinical practice.

N/A

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Abstract Theme:
Congenital Myopathy

Abstract Title:
CRPPA Mutations Causing Congenital Muscular Dystrophy: A Case Report

Background

Congenital muscular dystrophy (CMD) is a group of inherited disorders characterized by early-onset muscle weakness with considerable clinical and genetic heterogeneity. Mutations in the CRPPA gene disrupt the O-mannosyl glycosylation of α-dystroglycan (α-DG), impairing its interaction with extracellular matrix proteins and leading to dystrophic pathology. While severe CRPPA-related CMD may present with brain and ocular abnormalities, milder phenotypes manifest predominantly as progressive limb-girdle muscle weakness.

Methods

We report two unrelated patients diagnosed with CMD caused by compound heterozygous mutations in CRPPA. Clinical history, neurological examination, serum creatine kinase (CK), electromyography (EMG), muscle MRI, genetic testing, and immunohistochemistry were performed.

Results

Patient 1, a 36-year-old male, exhibited progressive lower limb weakness and pseudohypertrophy since childhood, with difficulty squatting and rising. Muscle MRI showed fatty degeneration and edema in thigh and calf muscles. Genetic testing revealed CRPPA c.532G>A (p.G178R) and a deletion of exons 6–9. Patient 2, a 25-year-old female, had childhood-onset gait instability and frequent falls. She developed increasing stair-climbing difficulty after a knee injury. MRI showed marked fatty infiltration of calf muscles. Her mutations included CRPPA c.1231C>T (p.L411F) and exon 6–9 deletion. Both patients showed significantly reduced α-DG expression by IIH6 and VIA4-1 immunostaining. Neither patient exhibited brain or ocular abnormalities.

Conclusions

These cases highlight a mild phenotype of CRPPA-related CMD characterized by isolated muscle involvement and adult-onset symptoms. The consistent exon 6–9 deletions may indicate a splicing-sensitive region requiring further investigation. Our findings expand the phenotypic spectrum of CRPPA-associated CMD and emphasize the diagnostic value of integrated clinical, radiologic, molecular, and immunohistochemical approaches.

The studies involving human participant were reviewed and approved by Medical Ethics Committee of Huashan Hospital, Shanghai Medical College, Fudan University. We confirm that we have read the Journal's position on issues involved in ethical publication and affirm that this report is consistent with those guidelines.

EP05

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Abstract Theme:
Muscular Dystrophy

Abstract Title:
Bi-allelic loss-of function variants in ATP2A1 cause autosomal recessive Brody disease

Background: Brody disease is a rare autosomal recessive myopathy caused by mutations in the ATP2A1 gene, leading to defective calcium regulation in skeletal muscles, which extremely prone to misdiagnosis. The study aimed to identify two novel ATP2A1 variants associated with Brody disease in a Chinese family.
Methods: Clinical details of the patient, including phenotypic and histological characterizations, were collected. Whole-exome sequencing was performed on the patient. The stability of SERCA1 protein was assessed using Western blot analysis.

Results: An 18-year-old woman presented with a 9-year history of exercise-induced muscle stiffness and poor exercise tolerance, with difficulty in activities such as walking, climbing stairs, and releasing clenched fists. Physical examination revealed delayed relaxation and motor persistence, with normal laboratory Results and unremarkable electromyography. Whole-exome sequencing identified two ATP2A1 variants: a missense variant (c.1051G>A; p.D351N) and an in-frame deletion variant (c.2221_2223del; p.S741del) in the affected patient. Western blot analysis of muscle tissue showed the absence of SERCA1 protein.

Conclusions: These findings emphasize the role of bi-allelic loss-of-function ATP2A1 variants in Brody disease, highlighting the importance of functional studies in classifying rare pathogenic variants and advancing our understanding.
This study received approval from the Ethics Committee of the People's Hospital of Zhengzhou University (FYYY2006-01-19-01).

EP06

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Abstract Theme:
Muscular Dystrophy

Abstract Title:
Safety and efficacy of tamoxifen in patients with Duchenne muscular dystrophy: A systematic review and meta-analysis.

BACKGROUND:
Duchenne muscle dystrophy is an X-linked recessive, neuromuscular disease that causes muscle weakness and degeneration. There are several clinical trials and meta-analyses on Duchenne muscular dystrophy resulting in different outcomes . However, the impact of tamoxifen, a selective estrogen receptor modulator (SERM) for the treatment of Duchenne muscular dystrophy remains unexplored in the world of meta-analysis. By including recent RCTs and providing sub-group analysis among ambulant and non-ambulant, we will be able to conclude more comprehensive, accurate and up-to-date evaluations.
METHODS:
A systemic literature search was conducted using PubMed as a database. Further, we will extend it using multiple databases (Cochrane Library, Scopus and Google Scholar) . Eligible studies will be included and excluded based on predefined PICO. Data will be extracted by using standardized data extraction and analyzed by a Random-effects model. The expected primary outcomes are a change in 6-minute walk distance (6MWD), motor function test and performance of Upper Limb (PUL) and secondary outcomes are time function test, biomarkers measured for muscle degeneration pulmonary function test etc.
RESULTS:
This meta-analysis will include surely 3 RCTs with 147 on tamoxifen and 127 on placebo and can increase according to further literature search on

different databases. The expected sub-group analysis will show that tamoxifen on non-ambulant has a more significant effect in measuring motor function tests as compared to ambulant without any severe adverse effect.

CONCLUSION:

This meta-analysis will cover the literature gap of DMD management by using tamoxifen and comparing it to placebo that will have a better impact on patients. However, the increase in RCTs and sample size is required to explore the effect of tamoxifen on patients with muscle dystrophy.

KEYWORDS:

Tamoxifen; Duchene muscle dystrophy; Motor function measurements.

ETHICAL APPROVAL:

Ethical approval was not applicable.

The protocol has been registered with Prospero (Registration No: CRD420251062290).

Not applicable.

EP07

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Abstract Theme:

Myasthenia Gravis

Abstract Title:

Efgartigimod versus Standard of Care in New-Onset AChR Subtype Generalized Myasthenia Gravis: A Prospective Cohort Study

Background:

To evaluate the efficacy and safety of EFG as an early add-on to the standard of care in new-onset acetylcholine receptor antibody-positive (AChR-Ab+) gMG.

Methods:

New-onset AChR-Ab+ gMG patients who received either EFG for at least one cycle (EFG group) or conventional treatment (Conventional Treatment group) were prospectively followed up for 12 weeks. MG-ADL scores and safety reports were collected. The primary outcome was the proportion of minimal symptom expression (MSE) responders. Subgroup analyses based on MG subtypes and therapeutic responses were conducted in the EFG group.

Results:

Of the 87 patients enrolled in the study, 57 patients received EFG plus standard-of-care, and 30 patients received conventional standard-of-care only. At 12 weeks after treatment, the number of MSE responders (45.61%, 26/57 vs. 13.33%, 4/30, p=0.0026) and MG-ADL responders (96.49%, 55/57 vs. 40.00%,12/30, p<0.0001) were both significantly higher in the EFG group than in the conventional treatment group. Among patients who received EFG, patients with late-onset gMG (LOMG) showed greater reductions in MG-ADL scores than the patients with thymoma associated MG (TAMG) (LOMG vs. TAMG, 7.06 ± 3.25 vs. 4.96 ± 3.40, p=0.040). However, the TAMG group achieved 50% MSE more rapidly than other subgroups (p = 0.026). No significant side effects were reported in the EFG group.

Conclusions:

EFG may be a promising treatment to help achieve rapid disease control in new-onset gMG. However, future research still needs to assess its cost-effectiveness and safety.

Data collection was completed by approval from the Huashan Hospital Ethics Committee (2019-441 and 2022-913). Signed informed consent was obtained from all participants before data collection (NCT04535843). The study adhered to the principles of the Declaration of Helsinki.

EP08

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Abstract Theme:
Hereditary Neuropathy

Abstract Title:
Expanding the Phenotypic Spectrum of DLDD: A Reversible Sensory Neuropathy Associated with Novel DLD Variants

Background:
Dihydrolipoamide dehydrogenase (DLD) deficiency is a rare inborn error of metabolism arising from pathogenic mutations in the DLD gene. Patients exhibit variable phenotypic and biochemical consequences based on the three affected enzyme complexes. The phenotypic spectrum of DLD deficiency includes an early-onset neurologic presentation, a primarily hepatic presentation, and a primarily myopathic presentation.
Methods:
Detailed medical history and physical signs of the patient were collected. Nerve biopsy tissue from the proband underwent histological, enzyme histochemical, and immunohistochemical stains, and electron microscopy analysis. Whole exome including mitochondrial DNA sequencing was conducted to investigate underlying variants. Sanger sequencing was used to analyze family cosegregation.
Results:
The patient initially experienced recurrent episodes of vomiting for unknown reasons in her early 20s. Each time there was an abnormal increase in transaminase. Numbness of limbs became consistent and prominent during the course of the disease. Electrophysiological studies indicated sensory axonal neuropathy in the limbs. Nerve biopsy showed large amount of lipid deposition in Schwann cells and severe loss of myelinated fibers. Genetic testing found compound heterozygous variants of c.745G > T (p.G249C) and c.1344 _ 1347del (p.D448Efs * 16) of the DLD gene. Immunoblotting revealed a significant decrease in the DLD protein level in the patient's fibroblasts. Treatment of a branched-chain amino acid (BCAA)-free powder formula remarkably alleviated her numbness and possibly stopped the attack of vomiting.
Conclusion:
DLD deficiency is a disease affecting multiple systems. We report an adult-onset case with liver damage and peripheral neuropathy as the main manifestations. Her mild clinical characteristics and good therapeutic effect provides further evidence of the heterogeneity of dihydrolipoamide dehydrogenase deficiency.
Keywords: Dihydrolipoamide dehydrogenase (DLD); E3 subunit; Hepatic function abnormal; Peripheral neuropathy
This work was supported by the National Natural Science Foundation of China (Grants 82160252, 82401687 and 82271439), Natural Science Foundation of Jiangxi province (20224ACB206015), Double thousand talents program of Jiangxi province (jxsq2019101021).

EP09

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Abstract Theme:
Congenital Myopathy

Abstract Title:
Atypical Limb-Girdle Weakness in a Patient with a Heterozygous CLCN1 Mutation: Diagnostic Pitfalls and the Expanding Phenotypic Spectrum of Myotonia Congenita

Background :
The CLCN1 gene encodes the skeletal muscle chloride channel ClC-1, essential for stabilizing the resting membrane potential and regulating muscle excitability. Heterozygous mutations in

CLCN1 are typically linked to autosomal dominant myotonia congenita (Thomsen disease), which usually manifests in childhood or adolescence with muscle stiffness, myotonia, and delayed relaxation. Limb-girdle muscle weakness is not a common feature. Here, we report a case of a CLCN1 mutation presenting with an unusual phenotype.

Case Presentation:

A 49-year-old male presented with progressive, asymmetric lower limb weakness, beginning as intermittent right knee buckling. Over five years, his symptoms worsened, leading to difficulty walking and proximal muscle fatigue. Electrodiagnostic studies showed an irritable myopathy without myotonic discharges. Serum testing revealed mildly elevated creatine kinase levels (402 U/L) and borderline-positive myositis-specific antibodies (anti-Mi-2+, anti-PL-2+, anti-KU-1+), initially suggesting overlap myositis. However, immunosuppressive treatment—including corticosteroids, azathioprine, and rituximab—produced no clinical improvement. Muscle MRI showed selective atrophy and fatty replacement of the thigh adductors and hamstrings, without signs of diffuse inflammation. Due to the atypical clinical course and lack of treatment response, genetic testing was pursued, revealing a heterozygous CLCN1 variant (c.396C>G, p.Ser132Arg), classified as likely pathogenic. No additional pathogenic variants were found on a comprehensive neuromuscular gene panel.

Discussion:

This case illustrates an unusual presentation of a CLCN1 mutation with limb-girdle weakness and no EMG evidence of myotonia, closely resembling inflammatory myopathy. The poor response to immunotherapy and selective muscle involvement on MRI prompted genetic evaluation, ultimately identifying a chloride channelopathy. This case expands the phenotypic spectrum of CLCN1 mutations, suggesting they may present with subclinical or absent myotonia, or isolated weakness. It highlights the importance of revisiting diagnoses in cases unresponsive to conventional treatment.

Keywords

CLCN1 mutation, Myotonia Congenita, Inflammatory Myopathy, Limb-girdle weakness, Myositis-specific antibodies.

Not applicable

EP10

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Abstract Theme:
Acquired Neuropathy

Abstract Title:
Patterns of Radial Neuropathy Presenting as Wrist Drop: Diagnostic Challenges and Electrophysiological Insights.

Background:
Radial neuropathy is a common aetiology of wrist drop, usually arising from compression, trauma, or iatrogenic injury. The precise localisation of the lesion by electrophysiological tests is essential for diagnosis and therapy. This study seeks to assess the clinical patterns, aetiologies, and electrophysiological characteristics of radial neuropathy manifesting as wrist drop in a tertiary care setting.

Methods: This retrospective observational study was performed in the Department of Neurology, MTI Lady Reading Hospital, Peshawar, over three years from January 2022 to December 2024. Adult patients (≥18 years) diagnosed with wrist drop attributable to radial neuropathy were included based on clinical and electrophysiological criteria. Demographic data, clinical presentations, aetiologies, imaging Results, and nerve conduction investigations were gathered and analysed by descriptive and inferential statistics.

Results: A total of 68 patients participated, comprising 48 males (70.6%) and 20 females(31.4%) females with a mean age of 42.3 ± 15.2 years. The right arm was predominantly afflicted in 39 patients (57.4%). The predominant cause was compression neuropathy in 26 patients (38.2%), with "Saturday night palsy" constituting

17 of these cases (65.4%), followed by trauma in 18 patients (26.5%) and iatrogenic injuries in 12 patients (17.6%). High radial nerve palsy was the predominant lesion location in 42 patients (61.8%), followed by posterior interosseous nerve syndrome in 20 patients (29.4%) and radial tunnel syndrome in 6 patients (8.8%). Electrophysiological investigations validated the localisation and severity of the lesion. Imaging was conducted in 32 patients, 47.1% of patients, demonstrating nerve compression or signal alterations in the majority of instances. All patients received conservative treatment; early diagnosis was substantially correlated with expedited recovery ($p < 0.05$).

Conclusions: Radial neuropathy primarily Results from external compression, particularly during sleep-related positions. Electrophysiological studies are crucial for the diagnosis and differentiation of lesion types. Conservative management produces positive Results, especially when implemented early. Additional prospective studies are necessary to assess long-term prognosis and improve treatment strategies. 1024/LRH/MTI

EP11

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Abstract Theme:
Other

Abstract Title:
NEUROMUSCULAR MANIFESTATIONS OF CHICKUNGUNYA VIRUS: A CASE SERIES

Background
Chikungunya virus (CHIKV), a mosquito-borne alphavirus, typically presents with acute febrile illness, rash and arthralgia. However, recent outbreaks have shown an increasing incidence of neurological complications, particularly affecting the peripheral nervous system. Neuromuscular manifestations such as radiculitis, acute or subacute neuropathy, myositis, though rare, are emerging as significant post-infectious sequelae. Understanding these complications is critical for timely diagnosis and management.

Objectives

1. To characterize the clinical features observed in patients with CHIKV associated para/post-infectious neuromuscular sequelae.
2. To evaluate electrophysiological patterns observed in these complications.
3. To assess the clinical outcomes in these patients.

Methods
We report a case series of seven patients (aged 30–80 years) who presented with neuromuscular manifestations following acute febrile illness consistent with CHIKV infection. All patients underwent nerve conduction studies/electromyography (EMG/NCS); cerebrospinal fluid (CSF) analysis and imaging were performed where appropriate.

Results: Six out of seven patients developed varying degrees of motor weakness, predominantly affecting the lower limbs, within 1–4 weeks of febrile onset. EMG/NCS revealed severe acute to subacute sensorimotor axonal polyneuropathy in all six cases. One patient had severe muscle aches and raised CPK levels but EMG/NCS did not show any myopathy. Two patients demonstrated quadriparesis with absent reflexes and required ventilatory support. CSF profiles showed mild to moderate lymphocytic pleocytosis, three patients had albumin-cytological dissociation. Immunomodulatory therapies (corticosteroids, plasmapheresis, and IVIG) were used either as monotherapies or in succession in case of clinically refractory disease course. Five patients improved significantly while two succumbed to their illness.

Conclusion: CHIKV infection can lead to severe neuromuscular complications, including acute sensorimotor axonal polyneuropathy resembling GBS. Early recognition and immunomodulatory therapy may improve outcomes. These findings highlight the need for heightened awareness of neurological sequelae in CHIKV-endemic regions.

Keywords: Chikungunya virus, neuromuscular complications, Guillain-Barré syndrome.

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Abstract Theme:
Myositis

Abstract Title:
A diagnostically challenging case of anti-TIF1γ and anti-Yo positive dermatomyositis with suspected paraneoplastic features and atypical treatment response.

Title:
A diagnostically challenging case of anti-TIF1γ and anti-Yo positive dermatomyositis with suspected paraneoplastic features and atypical treatment response.
Background:
Dermatomyositis is an idiopathic inflammatory myopathy often associated with malignancy, particularly in the presence of anti-TIF1γ antibodies. Co-positivity with anti-Yo antibodies is rare and more commonly linked to paraneoplastic neurological syndromes. Plasmapheresis is not routinely recommended due to limited evidence supporting its efficacy.
Case Presentation:
We present a diagnostically complex case of a 59-year-old Persian-speaking male from Afghanistan with a 1.5-year history of progressive proximal and distal muscle weakness, more prominent proximally, along with significant weight loss. He had no smoking or substance use history. Examination revealed digital clubbing, Gottron's papules, shawl sign, facial rash, and marked wasting of proximal and intrinsic hand muscles, with no joint involvement. Systemic examination was unremarkable.
Extensive laboratory testing, including metabolic panel, CPK, ESR, CRP, ANA, and ASO, was within normal limits. Myositis-specific antibodies were positive for anti-TIF1γ and anti-Yo (PCA-1 IgG), suggesting a paraneoplastic inflammatory myopathy. Imaging, including contrast-enhanced CT of the thorax, abdomen, and pelvis (CT TAP), endoscopy, colonoscopy, and whole-body PET scan, was normal so far. However, given the strong association of both antibodies with malignancy, it is important to note that in paraneoplastic syndromes, radiologic abnormalities may take time to develop—sometimes appearing only after several months, such as three months or more.
Results:
The patient was treated with high-dose corticosteroids and plasmapheresis, resulting in approximately 30% improvement in muscle strength and resolution of cutaneous features, though he remained non-ambulatory. QuantiFERON was negative, and rituximab was initiated with ongoing follow-up.
Conclusion:
This case highlights a rare co-positivity of anti-TIF1γ and anti-Yo antibodies in dermatomyositis without detectable malignancy at the current time. The partial yet notable response to plasmapheresis suggests the need to re-evaluate treatment approaches in select, antibody-driven cases. Continuous malignancy surveillance remains essential, as imaging may become positive over time.
Keywords:
Dermatomyositis, Anti-TIF1γ, Anti-Yo, Paraneoplastic myopathy, Plasmapheresis, Inflammatory myopathy
Not needed for abstract

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Abstract Theme:

Other

Abstract Title:
Myofibrillar Myopathy Associated with Novel LDB3 Gene Mutation: The First Report of Maternal and Daughter Presentation in the Philippines

Background:
Myofibrillar myopathy (MFM) is a rare, inherited neuromuscular disorder characterized by progressive muscle weakness, Z-disk dysfunction, myofibril disintegration, and abnormal protein aggregation. While MFM can lead to severe complications like cardiomyopathy and respiratory failure, its clinical presentation is highly variable, and data from specific populations, particularly in Southeast Asia, remains limited.
Case: We present the first documented case of LDB3-related myofibrillar myopathy in a Filipino mother and her daughter. The proband, a 45-year-old female, experienced proximal muscle weakness in childhood, leading to ambulation difficulties and frequent falls. Her 28-year-old daughter developed proximal lower extremity weakness and frequent stumbling in early adulthood. Neither exhibited ophthalmoplegia nor bulbar symptoms. Electromyography and nerve conduction studies in the proband showed myopathic irritative potentials. Muscle biopsy revealed a myofibrillar myopathic process with multicore features. Genetic testing confirmed a heterozygous LDB3 variant c.1804T>C (p.Tyr602His) in both affected family members.
Conclusion:
This report highlights the intrafamilial phenotypic variability of LDB3-associated MFM, with differing ages of onset and clinical severity, even within the same family. This case underscores the critical importance of genetic testing for accurate diagnosis, genetic counseling, and early identification of at-risk family members in hereditary neuromuscular disorders, especially in under-reported populations like the Philippines.

USTH Ethics Approval: REC-2024-09-119-TR-AP, November 28, 2024

EP14

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Abstract Theme:
Acquired Neuropathy

Abstract Title:
When Neuropathy Speaks Volumes: Unveiling POEMS Syndrome Through Nerve Conduction Studies.

Background:
POEMS syndrome is a rare paraneoplastic disorder characterized by polyneuropathy, organomegaly, endocrinopathy, monoclonal gammopathy, and skin changes. Neuropathy is often the presenting feature and may mimic chronic inflammatory demyelinating polyneuropathy (CIDP) because of the presence of demyelinating features on electrodiagnostic (EDX) testing, frequently leading to misdiagnosis and delayed treatment.
Objective:
To present a case of POEMS syndrome in which initial nerve conduction studies revealed demyelinating polyneuropathy, prompting further systemic evaluation and eventual diagnosis.
Case Presentation:
A 30-year-old male presented with an 18-month history of progressive lower limb weakness, tingling sensation, and distal paresthesia. The weakness initially affected the distal muscles of the lower limbs and gradually progressed to involve proximal muscles, followed by a similar progression in the upper limbs. Over time, he developed severe muscle wasting, especially in the hands, with contractures and deformity. He reported a 6–8 kg weight loss, loss of appetite, and persistent fatigue over the past year. Additional symptoms included constipation, dry skin, and generalized tiredness.
Initially diagnosed as a case of CIDP and treated with steroids and plasma exchange (PLEX) without clinical improvement.
Nerve conduction studies demonstrated symmetrical, demyelinating sensorimotor polyneuropathy, initially raising suspicion for CIDP. However, the lack of response to IVIG and

the presence of hepatosplenomegaly, hyperpigmentation, and hypothyroidism prompted further investigations.
Diagnosis of POEMS syndrome was confirmed based on the updated criteria.
Conclusion:
In patients with demyelinating polyneuropathy unresponsive to standard therapies such as IVIG or steroids, POEMS syndrome must be considered. Early identification of systemic signs and monoclonal protein is essential. NCS findings can provide the initial diagnostic clue, particularly in resource-limited settings.
Keywords: POEMS syndrome, Demyelinating polyneuropathy, NCS, CIDP, Monoclonal gammopathy.

Not Applicable

EP15

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Abstract Theme:
Other

Abstract Title:
Whole-Body Muscle Imaging Study of Desminopathy – A Case Series

Introduction:
Desminopathy is an adult-onset disorder caused by mutations in the muscle-specific intermediate filament protein desmin. Previous studies using whole-body or regional MRI protocols have identified muscles with greater involvement in the disease. This study aims to characterize the skeletal muscle imaging features using an agglomerative clustering and pattern prediction analyses based on the modified Mercuri score (mMS).
Methods:
Fourteen adult patients with confirmed DES mutations with whole body MRI or CT scan data were included. The data was analyzed using computational techniques to predict a progression pattern correlating the degree of involvement.
Results:
Semitendinosus, rectus femoris, short head of the biceps femoris, thoracic paraspinal, fibularis longus, and fibularis brevis muscles showed advanced involvement even in the early stage; while the biceps and triceps brachii showed minimal to absent involvement even during the late stage of the disease. The male patients in the severe group showed higher mMS for rectus femoris, sartorius, and gracilis compared to the female patients; while the female patients in the same group showed higher mMS (mMS of 4) for the vasti muscles.
Conclusion:
This study illustrates how detailed imaging and computational analysis can highlight meaningful progression patterns even in rare diseases with small cohorts.
All patients provided informed consent for using their samples for research after the diagnosis.
This study was approved by the ethical committees of the NCNP (approval number: A2022-045, B2024-130)

EP16

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Abstract Theme:
Muscular Dystrophy

Abstract Title:
The Clinical and Genetic Characteristics of Late-Onset Facioscapulohumeral Muscular Dystrophy Type 1

Background: To summarize the clinical and genetic characteristics of late-onset facioscapulohumeral muscular dystrophy type 1 (FSHD1) and compare them with classic-onset FSHD1.
Methods:
A retrospective analysis was conducted on genetically confirmed late-onset FSHD1 patients (onset age >30 years) diagnosed between January 2007 and June 2024 at two neuromuscular centers in China. Classic-onset FSHD1 patients (onset age 10–30 years) were matched 1:1 by sex and disease duration. Clinical data, D4Z4 repeat number, distal D4Z4 methylation levels, FSHD clinical score (CS), clinical severity score (CSS), and age-corrected clinical severity score (ACSS) were collected. Kaplan-Meier analysis was used to compare the age and duration to lower extremity involvement. Correlations between genetic/epigenetic markers and clinical severity were assessed.
Results:
Sixty-one late-onset FSHD1 patients (median onset age: 54 years; 54.1% female) were included. Compared to matched classic-onset patients, late-onset cases had significantly lower CS, CSS, and ACSS scores (all $P < 0.05$) and a higher proportion of limb-girdle-predominant weakness without facial involvement. Lower extremity involvement occurred later (45 vs. 24 years, $P < 0.0001$) and progressed more slowly (15 vs. 8 years, $P = 0.0004$) in the late-onset group. Late-onset patients had significantly higher distal D4Z4 methylation levels ($P = 0.014$). Among them, CpG6 methylation levels showed stronger correlation with ACSS ($r = –0.278$, $P = 0.025$) and CSS ($r = –0.441$, $P = 0.003$) than D4Z4 repeat number.
Conclusions:
Late-onset FSHD1 patients show milder symptoms, slower progression, and more frequent absence of facial weakness compared to classic-onset cases. Age at onset may serve as a marker of disease severity. D4Z4 methylation level correlates better with clinical severity than D4Z4 repeat number.
This study was approved by the Medical Ethics Committees of Peking University First Hospital and the First Affiliated Hospital of Fujian Medical University. Written informed consent was obtained from all patients or their legal guardians. The ClinicalTrials.gov identifier for this study is NCT04369209.

EP17

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Abstract Theme:
Pathogenesis

Abstract Title:
Myofiber atrophy and Neuromuscular abnormalities in DNM2 mutation causing Centronuclear Myopathy

Background:
Centronuclear myopathy (CNM) is a congenital neuromuscular disorder caused by mutations in DNM2, BIN1, and MTM1, characterized by muscle weakness, ptosis, and centrally located myonuclei. Emerging evidence suggests that neuromuscular junction (NMJ) defects may contribute to CNM pathology. To investigate NMJ involvement, we analyzed imaging, histological, and functional data from CNM patients and generated a DNM2 E368K knock-in mouse model.
Methods:
Muscle biopsies from 44 genetically confirmed CNM patients underwent acetylcholinesterase (AChE) staining to assess NMJ integrity; electron microscopy (EM) evaluated postsynaptic ultrastructure. Repetitive nerve stimulation (RNS) was performed in 13 patients to detect decremental responses. Six patients with NMJ dysfunction received acetylcholinesterase

inhibitor (AChE-I) therapy and were assessed for strength improvement. We generated DNM2 E368K knock-in mice and measured body weight, motor performance (grip strength, rotarod), and in situ muscle force. Histological analysis of myofiber morphology and NMJ architecture (pre-/postsynaptic alignment) was conducted.

Results:

All CNM patient biopsies exhibited circumferential AChE staining along the sarcolemma rather than normal endplate localization, indicating NMJ structural abnormalities. EM revealed disrupted postsynaptic folds. RNS testing showed decremental responses in 8 of 13 patients, and AChE-I therapy improved muscle strength in 4 of 6 treated patients. DNM2 E368K mice displayed reduced body weight, impaired motor performance, and decreased muscle force. Histology revealed extreme myofiber atrophy and enhanced endocytic activity. NMJ analysis in mice demonstrated misalignment between presynaptic terminals and acetylcholine receptor clusters.

Conclusions:

These findings indicate that NMJ dysfunction significantly contributes to muscle weakness in CNM. The myasthenic features observed and responsiveness to AChE-I therapy reveal a treatable synaptic defect. The DNM2 E368K mouse model confirms dual pathology of myofiber atrophy and NMJ misalignment, highlighting DNM2's role in NMJ maintenance and suggesting targeted therapeutic strategies for DNM2-related CNM.

Not Applicable

EP18

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Abstract Theme:
Other

Abstract Title:
Structural variants (SVs) underlying neurogenetic and neuromuscular diseases

Our research consortium is focused on identifying the genetics underlying neurogenetic and neuromuscular diseases, including fetal akinesias, myopathies, neuropathies, movement disorders and ataxias. Variants in >1,000 genes are currently known to underly these diseases. Around 25-50% of patients receive a molecular diagnosis after screening via comprehensive targeted gene panels, exomes or genomes. Increasingly, we need to leverage more sophisticated approaches for solving the unsolved, to identify variants that remain hidden in the genome. New bioinformatic approaches and genomic technologies facilitated identification of several SVs in Australasian families, including known (CNBP) and novel STR expansions (ABCD3, EP400). We identified 5'UTR CCG expansions in ABCD3 as the first known cause of oculopharyngodistal myopathy in families of European origin. SV callers identified complex SVs associated with ataxias, spastic paraplegia and a Rett-like syndrome. These SVs include an interspersed duplication and a gene-fusion event, both of which likely result in aberrant gene expression. These SVs are confirmed by orthogonal

Methods including karyotyping, PCR, RP-PCR and long-read sequencing. Bionano optical genome mapping has also been used to identify and confirm SVs, including the 2.6kB retrotransposon insertion causing Lubag syndrome. In many instances identification of the causative SV ended a long diagnostic odyssey for the family. Functional genomics for complex SVs, which are likely to be private to a family, will require bespoke assays. The rarity or private nature of some SVs may render it impossible to classify them as LP/P according to ACMG guidelines. New criteria may need to be developed and adopted to enable clinical testing and reporting of private SVs.

UWA HREC 2022/ET000629

EP19

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Abstract Theme:
Motor Neuron Disease/ALS

Abstract Title:
Potential drug targets for amyotrophic lateral sclerosis:a comprehensive computational biology study

Background:
To explore potential drug targets for amyotrophic lateral sclerosis (ALS) using computational biology Methods.
Method:
The publicly available GSE139384 dataset was downloaded from the GEO database to obtain the gene expression profiles of frontal/temporal lobe brain tissues of ALS patients. Comprehensive analysis was conducted using bioinformatics tools such as RStudio 4.3.2 software, Cytoscape 3.9.1 software, STRING database, NetworkAnalyst database, and AutoDockTools 1.5.7 software.
Results:
The Results showed that compared with the brain tissue of normal people, there were 370 differentially expressed genes in ALS. KEGG enrichment analysis revealed that the differentially expressed genes were concentrated in the neurodegenerative disease pathway and the synaptic capsule circulation pathway. GO functional enrichment analysis suggests that there may be abnormalities related to synaptic function in the brains of ALS patients, including abnormalities in processes such as synaptic vesicle circulation, neurotransmitter secretion, and neurotransmitter transport. GSEA analysis suggests that the top five pathways with the highest scores are involved in signal transduction and synaptic function between neurons, including the circulation of synaptic vesicles, the regulation of neurotransmitter release, and vesicle-mediated transport within synapses. The resulting differentially expressed genes further construct the protein-protein interaction network (PPIN). The PPIN analysis Results identified five central genes (SNAP25, SYT1, SLC17A7, SYN2, SYP) and five protein modules. Among them, SNAP25 is the main regulatory gene and a potential mediator for communicating the first four protein modules. Furthermore, the Results of molecular docking analysis indicated that retinoic acid (-4.32KJ-mol) and 4-(5-benzo (1,3) dioxone-5-yl-4-pyridine-2-yl-1h-imidazole-2-yl) (-4.95KJ/mol) exhibited higher affinity with SNAP25, surpassing the FDA-approved ALS drugs. For example, riruzole and edaravone.
Conclusion: S
NAP25 may be A potential drug target for ALS, and tretinoin and 4 - (5-benzo(1、3)dioxol-5-yl-4-pyridin-2-yl-1H-imidazol-2-yl) may be promising candidate compounds for the treatment of ALS patients.
Not Applicable

EP20

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Abstract Theme:
Muscular Dystrophy

Abstract Title:
Efficacy of the "Fantastic Four" forts with Duchenne muscular dystrophy with heart failure

Background:
ACE inhibitors (ACE-I), angiotensin receptor neprilysin inhibitors (ARNI), beta-blockers (BB), mineralocorticoid receptor antagonists (MRA), and SGLT-2 inhibitors (SGLT2i) are commonly used to treat patients with heart failure. These are grouped into four categories: SGLT2i, ARNI/ACE-I, MRA, and BB, collectively referred to as the "Fantastic Four." Also, heart failure is a leading cause of death among patients with Duchenne

muscular dystrophy. However, it remains unclear how the “Fantastic Four” is used in these patients.

Methods:

We reviewed patients with Duchenne muscular dystrophy who visited our hospital between 2021 and 2024. We focused on those who did not have diabetes and were using SGLT2i for heart failure. A retrospective survey was conducted to investigate the use of the “Fantastic Four” in these patients.

Results:

A total of 24 patients with Duchenne muscular dystrophy were using SGLT2i for heart failure (mean starting age: 24.5 years). Of these, 13 received all four medication types, 9 received three types, and 2 received two types. The average treatment duration was 16.9 months. The average body weight at the start of treatment was 46.0 kg, while it was 43.8 kg 1 year later. The average ejection fraction at the start of treatment was 38.7%, while it was 37.6% 1 year later.

Conclusions:

Although this study was conducted at a single facility, we found that 13 patients with Duchenne muscular dystrophy were using all four medications of the “Fantastic Four” to treat heart failure. Among those using SGLT2i, 13 out of 24 patients (the majority) used all four drugs. Based on the echocardiogram Results, body weight changes, and tolerability at 1-year follow-up, we believe that the “Fantastic Four” medications can be effectively used to treat heart failure in patients with Duchenne muscular dystrophy.

National Omuta Hospital Ethics Committee, No 6-28, 2024-9-4, 2027-9-31

EP21

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Abstract Theme:
Motor Neuron Disease/ALS

Abstract Title:

Young-Onset Amyotrophic Lateral Sclerosis with Early Bulbar Involvement and Sensory Symptoms: A Rare Clinical Variant

Background:

Amyotrophic Lateral Sclerosis (ALS) is a rare neurodegenerative disease that affects upper and lower motor neurons (LMN & UMN), resulting in progressive paralysis. This disease mainly occurs in the fifth to sixth decade of life, with only 5% of cases before age 30.

Methods:

Informed written consent was taken by the patient themselves. We confirm that no data in the submission reveals the patient’s identity.

Case Presentation: A 27-year-old male presented with progressive bilateral lower limb weakness with pain, later involving the upper limbs over 3 months. Knee buckling led to frequent falls. Within a week, he lost grip strength, unable to lift objects. Over the next two weeks, he developed dysphagia. Two months later, his voice became husky. Lab findings showed positive antinuclear antibodies (ANA) with elevated cerebrospinal fluid (CSF) protein (520%). The patient also showed LMN and UMN signs, and failed to show improvement with steroids.

Comment/Conclusion:

This case is an example of diagnostic delay in ALS due to the presence of atypical features such as sensory loss, ANA positivity, and elevated CSF protein. Such findings initially suggested immune-mediated neuropathies like Chronic Inflammatory Polyradiculoneuropathy (CIDP) or SLE-associated neuroinflammation; however, the diagnosis was shifted towards ALS for two-fold reasons: first, the emergence of progressive LMN and UMN signs, tongue atrophy with fasciculations, palatal weakness, and second, the absence of systemic autoimmune features and failure to respond to corticosteroids validated the diagnosis. Notably, bulbar involvement in young individuals and the presence of glove-and-stocking sensory loss with proprioceptive deficits are rare findings, raising the possibility of less typical variants. This case highlights the need for longitudinal assessment and timely distinction from other neuropathies, adding to previously documented ALS cases mimicking CIDP. It reinforces that ALS should remain in the differential, even with autoimmune features present, to prevent diagnostic delays and begin appropriate planning for disease

progression, along with realistic patient counselling.

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EP22

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Abstract Theme:
Treatment and Management of NMD

Abstract Title:
Intravenous efgartigimod versus intravenous immunoglobulin (IVIg) in Guillain-Barre Syndrome: a prospective multicenter study

Background
Guillain-Barré syndrome (GBS) is an acute inflammatory autoimmune polyradiculoneuropathy characterized by progressive flaccid paralysis. The standard treatments include intravenous immunoglobulin (IVIg) and plasma exchange (PE), with some patients exhibiting no significant improvement. Efgartigimod is a human IgG1-derived Fc fragment antagonizing FcRn, effectively eliminating pathogenic IgG antibodies from the body. This study aims to compare its efficacy with IVIg in GBS.

Methods
This was a multicenter, real-world, prospective study performed in China. Patients meeting the diagnostic criteria for GBS with a GBS Disability Scale (GBS-DS) score ≤5 were eligible for inclusion, regardless of their clinical subtypes. Participants receive intravenous efgartigimod (10 mg/kg, one infusion per week) or IVIg (2 g/kg). Participants administered intravenous efgartigimod were aged ≥18 years. The primary efficacy endpoint was the proportion of GBS-DS responders in the GBS population. The assessment was performed at baseline, one week after treatment initiation (week 1), and at the third follow-up.

Results
A total of 41 participants were screened between January and October 2024, of whom 22 were enrolled, including 11 each in the intravenous efgartigimod and IVIg groups. At week 1's visit, 14 patients improved in GBS-DS scores, with 7 (7/11, 63.6%) in the efgartigimod group and 7 (7/11, 63.6%) in the IVIg group. At the third visit, 4 (4/5, 80.0%) patients in the efgartigimod group and 9 (9/11, 81.8%) in the IVIg group improved (p>0.99).

Conclusions
Intravenous efgartigimod is efficacious and well tolerated in patients with GBS. Intravenous efgartigimod is comparable with IVIg in clinical improvement rate.
The study was performed by the Declaration of Helsinki and approved by the Ethics Committee (Approval No. KY2024-1007).

EP23

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Abstract Theme:
Spinal Muscular Atrophy

Abstract Title:
Nusinersen for Spinal Muscular Atrophy: Real-World Efficacy and Quality of Life Data from Asia

Background:

Nusinersen, the first FDA-approved disease-modifying therapy for spinal muscular atrophy (SMA), has demonstrated safety and efficacy in clinical trials and real-world studies from Europe and North America, but Asian real-world data are limited.

Methods:

This prospective study followed 32 SMA patients (31 children, 1 adult; 10 SMA type 1, 13 type 2, 8 type 3, 1 pre-symptomatic with 3 SMN2 copies; age 0.04–24.04 years) who started nusinersen between January 2017 and May 2024. Median treatment duration was 3.16 years (range 0.56–8.12). At baseline, 56% were wheelchair users and 31% required ventilatory support. Motor function was assessed using CHOP-INTEND, HINE-2, RULM, HFMSE, and 6MWT at baseline, 6 and 10 months post-nusinersen, then annually. Health-related quality of life (HRQOL) was evaluated with PedsQL Neuromuscular Module, Generic Core scale, and Family Impact Module. Patient-reported outcomes (PROs) were collected after one year.

Results:

Between 79–86% of patients demonstrated clinically significant improvements in at least one of five motor function tests. Statistically significant gains were observed in RULM ($p=0.005$), HFMSE ($p=0.021$), and CHOP-INTEND ($p=0.043$). Parent HRQOL (Family Impact Module) improved in eight of nine domains and total scores at 1st, 2nd, and 3rd years ($p<0.05$). Patient HRQOL (Neuromuscular Module, parent-proxy) and the school/work domain (Generic Core, parent-proxy) also improved significantly ($p<0.05$). All respondents reported improved motor function; 54% noted better respiratory function, 31% improved swallowing, and 23% improved speech. However, 10 patients required new ventilatory support after nusinersen initiation, and 23 of 29 experienced scoliosis progression, with five requiring spinal surgery.

Conclusion:

Nusinersen led to significant improvements in motor function and general health, translating into better family functioning, enhanced parental's physical and mental well-being, and increased their social engagement. However, patients continue to have complex medical needs, highlighting the importance of ongoing multidisciplinary care.

HKU/Hospital Authority HK West Cluster IRB Committee (UW19-418)

EP24

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Abstract Theme:
Congenital Myopathy

Abstract Title:
Limb-girdle muscular dystrophies in Myanmar: An 8-year Experience

Structured Abstract:

Limb girdle muscular dystrophy (LGMD) is a diverse group of inherited muscular dystrophies caused by various mutations in genes encoding the protein specific to each subtype. We present LGMD cases identified in Myanmar using the new classification system.

Method:

Genetically confirmed myopathy cases encountered from 2016 to 2024 were prospectively recruited. Among them, LGMD cases were selected for presentation here.

Results:

Among 80 patients of inherited myopathies, 19 (24%) were LGMD. The most common subtype was LGMDR2 (Dysferlinopathy) (32%), followed by LGMDR1 (calpainopathy) and LGMDR23 (laminin-α2-related muscular dystrophy), each constituting 26%. These were followed by one each of LGMDD5 (COL6A2 mutation), LGMDR12 (anoctaminopathy), and LGMDR16 (α-dystroglycanopathy). Most LGMD cases typically presented with progressive proximal muscle

weakness primarily affecting skeletal muscles, with age ranged from 14 to 62 years. Mean ages were 62, 46.8, 35.6, 23, 26.3 and 14 years for LGMDD5, LGMDR23, LGMDR1, LGMDR2, LGMDR12, and LGMDR16 respectively. Calpainopathies and Bethlem myopathy presented with pure limb-girdle weakness, whereas dysferlinopathies had additional calves wasting and diamond on quadriceps sign. LGMDR23 patients presented with abnormal gait. LGMDR16 exhibited a scapuloperoneal pattern of weakness with bilateral foot drop and calf hypertrophy. Creatine kinase (CK) levels were highest in dysferlinopathies (average 10893 U/L) and lowest in Bethlem myopathy (147 U/L). A positive family history was found in 8 of 19 patients, all being LGMDR1 (60%) and LGMDR23 (100%).

Conclusion:

Considering the entire group, LGMD is the most common type of genetic myopathy in Myanmar, followed by dystrophinopathy, myotonic dystrophy, facioscapulohumeral muscular dystrophy, and distal myopathies. Age, clinical pattern, mode of inheritance, and CK can aid in clinical diagnosis since access to genetic testing and muscle biopsy remains a major challenge in our country.

Key words: Limb girdle muscular dystrophy, Myanmar

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EP25

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Abstract Theme:
Pathogenesis

Abstract Title:
GRO-induced Neutrophil Extracellular Traps Aggravate Myasthenia Gravis via Activating the Complement System and Promoting B to Plasma Cell Transition

Background

Myasthenia Gravis (MG) is an autoimmune disease marked by impaired neuromuscular transmission. The role of innate immune cells, especially neutrophils and their extracellular traps (NETs), in MG pathogenesis remains unclear. This study investigates how neutrophils and NETs

exacerbate MG, focusing on complement activation and B cell differentiation.

Methods

Clinical data from a Chinese autoimmune cohort (n=11,367) and the UK Biobank (n=2,275) were integrated. Multi-omics approaches—including GWAS, bulk and single-cell RNA sequencing, flow cytometry, proteomics, and in vitro functional assays—were used to identify genetic risk associations between 3,273 plasma protein quantitative trait loci (pQTLs) and MG. Peripheral blood neutrophil counts, activation status, and molecular characteristics were analyzed. The roles of GRO chemokines and their receptor CXCR2 in NETs formation and MG pathogenesis were assessed. Complement activation, B cell subset analysis, in vitro NETs stimulation, and sting gt/gt mouse models were used to study NETs' effects on complement and B cell function.

Results

MG patients showed significantly elevated peripheral neutrophil counts and activation compared to other autoimmune diseases. Neutrophil-to-lymphocyte ratio (NLR) correlated with disease severity. GWAS and pQTL analyses identified high levels of GRO chemokines (CXCL1/2/3) as the strongest MG risk factors. CXCR2 was highly expressed on MG neutrophils, promoting GRO-driven NETosis and robust NOX-dependent NETs release. MG-derived NETs activated the complement system, increasing C5a and C5b-9, which deposited in skeletal muscle and thymic germinal centers. In vitro, MG NETs promoted B cell activation and plasma cell differentiation, enhancing autoantibody (e.g., AChR antibody) production. NETs levels correlated positively with AChR antibody titers and MG clinical severity.

Conclusions

This study identifies the GRO-CXCR2-NETs axis as a key pathogenic mechanism in MG, bridging innate and adaptive immunity. CXCR2-high neutrophils are the main NETs source in MG, aggravating disease through complement activation and B cell differentiation. NETs are a promising therapeutic target, offering a basis for immune modulation and precision therapy in MG.

The study was reviewed and approved by the Institutional Review Board of Huashan Hospital, Fudan University (approval numbers 2020-883 and 2024-1310). Informed consent was obtained from all participants. The study was conducted in accordance with relevant guidelines and regulations. Clinical data and biospecimens from Chinese MG patients were sourced from an established MG registry (ClinicalTrials.gov ID: NCT04535843).

EP26

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Abstract Theme:
Metabolic myopathy

Abstract Title:
Genotype-phenotype correlation in progressive external ophthalmoplegia: insights from a retrospective analysis

Backgroud：

Progressive external ophthalmoplegia (PEO) is a classic manifestation of mitochondrial disease. However, the link between its genetic characteristics and clinical presentations remains poorly investigated.

Methods：

We analysed the clinical, pathological, and genetic characteristics of a large cohort of patients wit PEO, based on the type of their mtDNA variations. 82 PEO patients were enrolled and grouped into three categories: mtDNA single large-scale deletions (SLDs), multiple deletions (MulDs), and the m.3243A>G point variant. Patients in the SLD category were further divided into "common deletion" and "non-common deletion" groups based on the presence or absence of a 4977-bp deletion. The mutational load of deleted mtDNA of these patients were comprehensively detected by real-time polymerase chain reaction (RT-PCR).

Results:

SLD Patients showed the highest proportion of cytochrome C oxidase-negative (COX-n) fibres on muscle biopsy. The mutational load of deleted

mtDNA exhibited an inverse relationship with deletion length and a direct relationship with the COX-n fibre ratio. Compared with patients having non-common deletions, those with common deletions tend to have other muscle involvement, lower body mass index (BMI) scores (17±3 vs 22±4 kg/m2), higher mutational load in muscle (63±22 vs 46±24 %), more COX-n fibres (26 vs 9 %, interquartile range [IQR]: 15-32 vs 6-26%), and higher growth and differentiation factor 15 (GDF15) levels (2583 vs 1472, IQR: 1746-4081 vs 924-2155pg/ml). MulDs patients displayed milder symptoms, especially compared to patients with m.3243A>G variant, as indicated by their later age of onset (31 vs 13, IQR: 27-49 vs 6-29 years), higher BMI scores (24.0±4 vs 16.5±3.4kg/m2), lower lactate (1.6±1.1 vs 6.3±6.0 mmol/L) levels and lower proportion of ragged-blue fibres (RBFs) (3 vs 16, IQR: 1-9 vs 7-27%).

Conclusion:

The m.3243A>G variant group exhibits more severe symptoms compared to other subgroups, particularly MulDs patients. In the SLD group, those with common deletions experience more severe clinical and pathological manifestations. These findings enhance our understanding of PEO, facilitating its diagnosis, prognosis, and genetic counselling.

This study was approved by the Medical Ethics Committee of Qilu Hospital.（KYLL-2021(KS)-079, from 2022.01 to 2025.12）

EP27

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Abstract Theme:
Hereditary Neuropathy

Abstract Title:

Genetic and Clinical Characterization of VRK1-Related Peripheral Neuropathy in a Chinese Charcot-Marie-Tooth disease Cohort

Background:

and Objectives: Autosomal-recessive(AR) VRK1 variants are associated with a spectrum of neuromotor syndromes, including peripheral neuropathy (PN), motor neuron diseases, and spinal muscular atrophy. This study aimed to characterize the genetic and clinical features of VRK1-related peripheral neuropathy within a Chinese Charcot-Marie-Tooth disease type 2 (CMT2) cohort.

Methods:

Clinical and genetic data from eight unrelated families were retrospectively enrolled and analyzed. Haplotype analysis was performed to investigate the founder effect of the high-frequency variant, and RNA sequencing was conducted for the splice variant. A systematic literature review (PubMed/CNKI, 2009-2025) was conducted to collate global cases.

Results:

VRK1 was the third most common gene in our AR-CMT2 cohort. Ten VRK1 variants were identified, including eight novel variants (c.7C>T, c.83T>G, c.215T>G, c.539C>T, c.879_882del, c.974T>A, c.1073_1076del, and c.1159+2T>A). The nonsense variant c.1124G>A (p.Trp375*) was found in 4/8 families, and haplotype analysis supported a founder effect. RNA sequencing confirmed that c.1159+2T>A caused exon 12 skipping, resulting in a frameshift mutation (P. Lys357VALfs *39). The clinical phenotypes included distal hereditary motor neuropathies (dHMN) (7 cases) and CMT2 (1 case). Notably, two dHMN patients exhibited upper motor neuron signs. All cases presented with progressive distal lower limb weakness, without neurodevelopmental impairment. Globally, 53 cases from 37 VRK1-related neuromotor syndromes families with 38 pathogenic variants were reported, showing marked clinical heterogeneity, with dHMN (28.8%) and SMA (26.9%) predominately. Early-onset cases (<5 years) exhibited rapid progression, whereas later-onset cases had slower courses.

Conclusions:

This study identifies eight novel VRK1 variants and confirms the founder effect of p.Trp375* in the Chinese population. These findings expand the genotypic and phenotypic spectrum of VRK1-

related PN and provide insights into their natural history for precise diagnosis and management. Ethical approval for this study was granted by the Ethics Committee of the Third Xiangya Hospital, Central South University (Approval No. 024-S601) in September 2024. This approval is valid until September 2027.

EP28

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Abstract Theme:
Other

Abstract Title:
Translation of GGC Repeat Expansions into a Toxic PolyG Protein in Oculopharyngodistal myopathy 2

Background
Expansions of GGC repeats in the 5' untranslated region (UTR) of the GIPC1 gene have been implicated in the pathogenesis of Oculopharyngodistal myopathy 2 (OPDM2). These expansions are implicated in the pathogenesis of OPDM2, but the exact mechanisms remain unclear.
Method:
We investigated the RAN translation of GGC repeats in OPDM2 using reporter constructs, cellular models, and patient-derived tissues. We generated specific antibodies to detect the translation product, uGIPC1polyG, and assessed its presence in cellular and animal models. Pathological consequences were evaluated in cell lines, iPSC-derived myotubes, and a zebrafish model.
Results:
We demonstrate that the expanded GGC repeats undergo repeat-associated non-AUG (RAN) translation, predominantly generating a polyG-containing protein, uGIPC1polyG initiated at a CTG codon located upstream of the repeat expansion. These polyG containing proteins aggregate and form intranuclear and cytoplasmic p62/ubiquitin positive inclusions, which are pathogenic marks in OPDM2. The translation of GGC expansions further causes mitochondrial dysfunction, abnormal calcium signaling, impaired cell proliferation, disrupted nuclear lamina architecture, as well as induced cytotoxicity and apoptosis in cell lines, including HEK293T cells, fibroblasts and iPSC derived myotubes from OPDM2 patients. Additionally, the animal model of Zebrafish exhibited developmental malformation and compromised locomotor function, demonstrating the in vivo toxicity of uGIPC1polyG.
Conclusion:
These findings suggest the translation of expanded GGC repeats into uGIPC1polyG might play a crucial role in the pathogenesis of OPDM2, highlighting uGIPC1polyG as a potential biomarker and therapeutic target.

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EP29

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Abstract Theme:
Metabolic myopathy

Abstract Title:
High Prevalence of GAA c.[752C>T;761C>T] complicates high-risk screening for late-onset Pompe disease in East Asian Populations

Background:
Pompe disease is an autosomal recessive disorder caused by biallelic pathogenic variants in GAA, leading to deficient acid α-glucosidase (GAA) activity. The clinical significance of the GAA variants c.752C>T (p.Ser251Leu) and c.761C>T (p.Ser254Leu), which reduce GAA enzymatic activity, remains uncertain.
Methods:
We retrospectively analyzed nine individuals of East Asian descent carrying c.752C>T and/or c.761C>T. Genetic testing and enzyme activity assays were performed to evaluate their association with Pompe disease.
Results:
All nine cases showed reduced GAA activity but no definitive Pompe disease symptoms. One 34-year-old homozygote had enzyme activity as low as 0.19 μmol/L/h without clinical signs. Three heterozygotes showed varied presentations: one asymptomatic, one with Behçet's disease, and one with myotonic dystrophy type 1. Five were compound heterozygotes for c.[752C>T;761C>T] and a known pathogenic variant; three were asymptomatic, while one child had post-encephalitic epilepsy and another had cardiomyopathy. A 12-year-old with the c.[752C>T;761C>T]/c.634G>A genotype showed no glycogen accumulation in muscle, further suggesting the variant is nonpathogenic.
The c.[752C>T;761C>T] variant is highly enriched in East Asian populations, with allele frequencies 244-fold higher than in Europeans. In Taiwan, this variant reduced GAA activity to 4% of wild type and caused Pompe-like biochemical profiles in fibroblasts. However, clinical follow-up revealed only mild, nonprogressive muscle symptoms. In Japan, this variant was detected in 1.56% of patients and 14.08% of newborns.
Conclusion:
The c.[752C>T;761C>T] variant likely represents a pseudodeficiency allele common in East Asians. Though associated with reduced enzyme activity, it rarely causes classic Pompe disease, highlighting the need for careful interpretation in diagnostic contexts, especially for asymptomatic individuals.

The studies involving human participants were reviewed and
approved by Medical Ethics Committee of Huashan Hospital,
Shanghai Medical College, Fudan University (approval no.
KY2021-537). The patients/participants provided their written
informed consent to participate in this study. Written informed
consent was obtained from the individual(s) for the publication
of any potentially identifiable images or data included in
this article.

EP30

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Abstract Theme:
Muscular Dystrophy

Abstract Title:
Burden of Cardiac Involvement and Local Management Practice in Children and

Adolescents with Duchenne Muscular Dystrophy in Hong Kong

OBJECTIVE:
The disease process in Duchenne Muscular Dystrophy (DMD) involves skeletal and cardiac muscles and both impact the quality of life and survival. This study reviews the burden of cardiac involvement in paediatric DMD patients and its management practice in Hong Kong.
METHODS:
A retrospective cohort study of the clinical data and cardiac surveillance scheme of paediatric DMD patients between 8 to 18 years of age managed in all paediatric departments under the Hong Kong Hospital Authority.
RESULTS:
27 DMD patients were identified. Cardiomyopathy was present in 29.6% and the median age of diagnosis was 12.79 years old (IQR 10.86 to 15.23). There were no identifiable risk factors to predict the onset of cardiomyopathy. There were gaps between local management practice and international guidelines.
CONCLUSION:
Paediatric onset of cardiomyopathy is not uncommon in Duchenne Muscular Dystrophy in Hong Kong. A standardized locally adapted surveillance scheme will be beneficial in the holistic care of our patients.
Hospital Authority Central Institutional Review Board, Approval date 22 Jan 2024

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Abstract Theme:
Other

Abstract Title:
Complex Fiber Splitting in Myopathy with Excessive Autophagy Leads to Pseudo-Neuropathic Motor Unit Action Potentials
Background:
XMEA is a rare autophagic vacuolar myopathy characterized by muscle fiber splitting and numerous autophagic vacuoles with sarcolemmal features on muscle histopathology. EMG typically shows abundant spontaneous activity (fibrillation potentials, CRDs, and myotonic discharge) and myopathic units with short duration and highly polyphasic units. Rarely, long, large, polyphasic MUAPs are concomitantly recorded.
Methods:
We evaluated a 60-year-old man with a decade-long history of gradually progressive proximal lower limbs weakness. Assessment included clinical examination, serum creatine kinase, muscle MRI, nerve conduction studies, needle EMG, and whole exome sequencing. A muscle biopsy of the left rectus femoris was analyzed via histology, immunohistochemistry, and electron microscopy.
Results:
Examination revealed bilateral iliopsoas and quadriceps weakness, proximal limb atrophy, reduced reflexes, and broad-based gait. CK was mildly elevated. MRI showed fatty infiltration in targeted muscle compartments. Nerve conduction studies were normal. EMG displayed complex repetitive discharges, fibrillations, fasciculations, positive sharp waves, and notably long-duration, high-amplitude, polyphasic motor-unit potentials—suggestive of neuropathy. Histologic sections showed fiber-size variability, nuclear internalization, vacuoles, and widespread complex fiber splitting. Vacuoles stained positive for sarcolemmal proteins. Electron microscopy demonstrated membrane-bound autophagic vacuoles, redundant basal lamina, and vacuolar extrusion. These findings are consistent with XMEA. EMG changes likely resulted from fiber splitting, which increases functional motor unit fiber count and simulates neuropathic potentials.
Conclusions:

In late-onset XMEA due to a recognized VMA21 mutation, extensive muscle fiber splitting can produce EMG signals that mimic neuropathic patterns. This case broadens the documented phenotype of XMEA and supports the recommendation for VMA21 genetic testing in adult men presenting with LAMP2-positive autophagic vacuolar myopathy and unexplained proximal weakness.

All procedures in this study were approved by the Institutional Review Board at Qilu Hospital of Shandong University (KYLL-202204-042-4), and informed consent was obtained from all participants prior to the study.

EP32

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Abstract Theme:
Myositis

Abstract Title:
Cryptic exon inclusion correlates with severity of hereditary rimmed vacuolar myopathies

Background:
Rimmed vacuolar myopathy (RVM) is a group of muscle diseases characterized by the presence of rimmed vacuoles (RVs) on muscle pathology, reflecting autophagic failure to clear degradation-resistant protein aggregates. TDP-43 plays a key role in RNA processing by binding to pre-mRNA and suppressing the inclusion of cryptic exons. In inclusion body myositis (IBM), a recent study reported the expression of cryptic exons in HDGLF2 gene and corresponding cryptic peptides were caused by the mislocalization of TDP-43 from myonuclei to cytoplasmic aggregates. However, it remains unclear whether this mechanism is also present in hereditary RVMs. This study aimed to identify and validate cryptic exon inclusion in skeletal muscle tissues from patients with RVMs, including GNE, VCP and IBM.
Methods:
RNA sequencing (RNA-seq) was performed on muscle biopsies from 12 GNE, 13 VCP, and 12 IBM patients. Percent Spliced In (PSI) values were calculated. For validation, an independent cohort comprising 25 GNE, 15 VCP, and 27 IBM patients, along with non-RVM controls, was analyzed by TaqMan RT-qPCR.
Results:
RNA-seq analysis revealed the inclusion of cryptic exons in four transcripts: HDGFL2, GPSM2, ACSF2, and ZFP91. PSI values for all four cryptic exons were elevated in the samples of all three disease. Cryptic exon expressions in all four genes were significantly upregulated compared to controls. Among these, inclusion of the cryptic exon in ACSF2 exhibited the highest diagnostic sensitivity and specificity across all disease groups. Moreover, its expression positively correlated with the number of RVs in muscle histopathology across all diseases, and with age at onset and patient age specifically in hereditary RVMs.
Conclusion:
Cryptic exon inclusion is not only restricted to IBM but also observed in hereditary RVMs such as GNE and VCP myopathies. Expression of the ACSF2 cryptic exon reflects disease burden and may serve as an additional molecular marker of RV pathology in skeletal muscle.

The Ethics Review Board of the National Centre of Neurology and Psychiatry (NCNP), approval number B2024-130.

EP33

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Abstract Theme:
Registry

Abstract Title:
Genetic Breakthroughs and Geographic Blind Spots: South Asia's Neglect in Neuromuscular Disorder Data

Background:
Despite significant global advancements in genetic diagnostics and therapies for neuromuscular disorders (NMDs) such as spinal muscular atrophy (SMA) and Duchenne muscular dystrophy (DMD), South Asia remains critically underserved. The region, which accounts for nearly one-third of global births and bears a heavy burden of genetic diseases, still lacks universal newborn screening (NBS) and national NMD registries, rendering many cases undetected from birth. This study aims to evaluate the current state of NMD-related data collection and newborn screening infrastructure across South Asia and highlight the urgent need for equitable access to genetic diagnostics and care.
Methods:
A narrative review was conducted using data from WHO, national health reports, and peer-reviewed literature across seven South Asian countries: India, Pakistan, Bangladesh, Nepal, Bhutan, Sri Lanka, and the Maldives. The review assessed health expenditure, birth rates, NBS program availability, and the presence of NMD registries.
Results:
Despite comprising 22% of the global population and a third of global births, South Asia lacks a regional government supported NMD registry. Newborn screening is limited to private urban centers such as Aga Khan University Hospital (Pakistan) and Mission NEEV (India) with unclear inclusion of NMDs. Existing efforts largely focus on metabolic and congenital conditions, with no routine screening for SMA or DMD. India and Pakistan host the only known NMD registries, while the rest of the region lacks formal surveillance systems. Health expenditure remains low, ranging from 2.39% (Bangladesh) to 9.65% (Maldives) of GDP, constraining expansion of screening initiatives. Additionally, genomic illiteracy among clinicians and families exacerbated by stigma and misinformation further hinders diagnosis and care.
Conclusion:
The lack of NMD screening and data infrastructure in South Asia reflects a deeper global health inequity. Bridging this gap demands urgent investment, policy reform, and inclusive collaboration to extend the reach of genetic medicine to all, not just the privileged few.
Keywords:
Neuromuscular diseases, Genetic testing, Health equity
Not Applicable

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Abstract Theme:
Muscular Dystrophy

Abstract Title:
From Innovation to Inclusion: The Case for Equitable Access to Givinostat in LMICs

Background
Duvyzat (givinostat) is a novel therapy for Duchenne muscular dystrophy (DMD) in patients aged six and older, effective across all genetic variants. This review evaluates its therapeutic potential, challenges, and feasibility in low-resource settings such as Pakistan.
Methods
A narrative review was conducted using recent clinical trials, FDA reports, and treatment guidelines. Regional context was added through health policy documents, drug availability data, and DMD infrastructure in South Asia.
Results
The EPIDYS trial, a multicenter, placebo-controlled study, evaluated 179 ambulatory boys with DMD over 18 months. While the primary

outcome (4-stair climb time) showed a non-significant trend favoring givinostat, secondary outcomes were significant. The givinostat group had a 1.9-point higher North Star Ambulatory Assessment (NSAA) score (P = 0.03) and 40% less muscle fat infiltration on MRI (P < 0.05), suggesting slowed disease progression.
Givinostat showed a favorable safety profile compared to corticosteroids and synergized with gene therapy by enhancing muscle regeneration, reducing fibrosis, and increasing dystrophin expression. Economic models project a 10–15% reduction in hospitalizations, annual savings of $30,000–$50,000 per patient, and a gain of 0.7–1.2 quality-adjusted life years (QALYs) when combined with corticosteroids.
However, access in LMICs remains a major challenge. The estimated annual cost of $700,000 is over 437 times Pakistan's GDP per capita and 500 times that of Nepal, making it financially inaccessible. Additional barriers include limited genetic testing, lack of regulatory frameworks, and the need for frequent monitoring.
Conclusion
While Duvyzat shows disease-modifying potential, its integration into LMIC care models requires urgent policy reform, global pricing equity, and development of local DMD registries. Advocacy for insurance coverage and support for regional clinical research are essential to promote equitable access.

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EP35

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Abstract Theme:
Congenital Myopathy

Abstract Title:
Muscle MRI changes in nebulin-related nemaline myopathy

Background: Nemaline myopathies (NMs) are one of the most common subtypes of congenital myopathies, of which NEB mutations were the most frequent causes of autosomal recessive subtypes. There are few studies on muscle magnetic resonance imaging (MRI) changes in NEB-related NMs. We aim at characterizing the diagnostic and prognostic values of muscle MRI patterns derived from clinical data in NEB-related NMs.
Methods: Twenty-one patients with confirmed diagnoses of NEB-related NMs were enrolled. The relationships between the MRI changes of lower extremity muscles and clinical features were investigated.
Results: Most patients (18/21) showed lower limb muscle weakness with distal predominant. In the lower limb, the mean fatty infiltration scores were the greatest in soleus (2.44) followed by gastrocnemius (2.00) and gluteus maximus (2.05). The severity of fatty infiltration in the thigh muscles was correlated with age at the time of MRI (r=0.569, p=0.009) and disease duration from symptom onset to MRI (r=0.597, p=0.005). The mean fatty infiltration scores of gluteus maximus (r=0.512, p=0.021), vastus medialis (r=0.467, p=0.038), sartorius (r=0.597, p=0.005) and adductor maximus (r=0.487, p=0.029) were correlated with disease durations. **Conclusions**: Previous reports on the evaluation of fatty degeneration by magnetic resonance imaging in NM patients with NEB gene mutations showed that the thigh muscles were mildly affected. However, our study found the degrees of lower limb muscle fatty infiltration in NEB-related nemaline myopathies were correlated with disease course, with gluteus maximus of thigh and soleus of calf most severely affected. Edema of the lower limb muscles was also frequently present with calf more obvious than thigh. These muscle MRI changes might be helpful in the diagnosis and follow-up of the disease.
This project was approved by the ethics committee of Peking University First Hospital, and informed consent was obtained from all participants.

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Abstract Theme:
Genetic/ Molecular Approaches

Abstract Title:
Defective DNA repair due to MORC2 mutations drives motor axon degeneration in MORC2 - related neuropathies

Background:
MORC2 mutations cause a spectrum of peripheral nervous system disorders, including Charcot-Marie-Tooth disease subtype 2Z (CMT2Z) and a spinal muscular atrophy (SMA)-like phenotype, but the underlying mechanisms remain unclear.
Methods:
iPSCs derived from a healthy control and patients carrying MORC2 mutations, p.S87L (SMA-like), p.Q400R and p.D466N (CMT2Z), were differentiated into motor neurons. In MNPs and MNs, TUNEL assay and apoptotic protein levels were used to evaluate apoptosis, while comet assays and γH2AX protein levels were analyzed to assess DNA damage. Axonal morphology of MNs was assessed via Tuj1 staining. The MORC2-PARP1 interaction was assessed by co-immunoprecipitation using 293T cells overexpressing wildtype or mutant MORC2. PARP1 expression and activity (measured by poly(ADP-ribose) (PAR) levels) were measured by Western blot, and the expression of DNA repair proteins was analyzed by qPCR in MNPs and MNs. Additionally, mutant MNs were treated with the PAR hydrolase inhibitor PDD to evaluate its therapeutic potential.
Results:
MORC2 mutants induced apoptosis, DNA damage, and axonal pathology including shortened neurites, elevated axonal breakage, and increased swelling bodies, with the most severe phenotypes observed in iPSC-MNs with p.S87L. Mechanistically, MORC2 mutations impaired DNA repair by disrupting the MORC2-PARP1 interaction, decreasing PARP1 expression and activity (PAR levels), and reducing DNA repair protein expression (BRCA1, RAD51, and DNA-PKc). PDD treatment restored PAR levels, reduced DNA damage accumulation, and improved axonal pathology in iPSC-MNs with p.S87L.
Conclusions:
MORC2 mutations impair DNA repair and contribute to axonal degeneration. Targeting the PAR signaling pathway may offer a potential therapeutic approach for MORC2-related neuropathies.
All procedures performed in animals were conducted in accordance with the standards of the Ethics Committee of the School of Life Sciences, Central South University (approval No. 2019-2-34, approved on March 10, 2019).

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Abstract Theme:
Motor Neuron Disease/ALS

Abstract Title:
Fasciculation in limbs serves as the predictor of ALS progression: An ultrasound study

Objective: To explore the predictive effects of fasciculation by ultrasound in amyotrophic lateral sclerosis (ALS) progression.

Methods:
Sporadic ALS patients were consecutively recruited and followed up 3 to 6 months after the initial visit. Muscle ultrasound examination was conducted at the baseline to detect the severity score of fasciculations on bilateral elbow flexor and extensor, ankle dorsiflexor and plantar flexor of each patient, the sum of which was defined as the total fasciculation score. Baseline and follow-up ALS functional research scale-revised

(ALSFRS-R) score and muscle strength were collected. The progression of ALS was reflected by the decline rate of ALSFRS-R score and proportion of muscles with decreased strength.

Results:

Among 33 ALS patients who completed the follow-up, the total fasciculation score was positively correlated with the ALSFRS-R progression rate (rho=0.029, p<0.001). Patients with low levels of the total fasciculation score had a significantly lower risk of rapid ALSFRS-R progression during follow-up compared to those with high levels of the total fasciculation score (HR 0.132, 95%CI 0.037-0.476). The frequencies of decline in muscle strength at the follow up were 76.32% and 16.54% among muscles with and without high-grade fasciculation (p<0.001) after exclusion of muscles with 0-1 the medical research council (MRC) levels of strength at the baseline.

Conclusion:

The severity of fasciculations was correlated with the rate of decrease in ALSFRS-R score and the decline in muscle strength, which might be used as a biological marker to predict the progression rate of ALS for prognostic judgment or clinical trial grouping.

The study was approved by the Ethics Committee of the Peking Union Medical College Hospital (PUMCH) (JS1210).

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Abstract Theme:
Motor Neuron Disease/ALS

Abstract Title:
Gait analysis of patients with amyotrophic lateral sclerosis

Objective: To explore the gait characteristics of amyotrophic lateral sclerosis (ALS).

Methods:

ALS patients and healthy controls (HC) were consecutively recruited. Demographic characteristics and physical examination were collected. Muscle strength was measured using the Medical Research Council (MRC) score. ALS patients were assessed using the revised ALS functional research scale (ALSFRS-R). Gait was evaluated using a 3D camera and a motion sensor. A machine learning model was established for feature extraction.

Results:

In comparisons with HC, significantly lower levels of gait speed, step stride, stride speed, cadence and swing speed, and higher levels of step width and turn time were detected in ALS patients (p<0.001). Positive correlations between the ALSFRS-R score and gait speed, stride, stride speed, cadence, swing speed and step height in ALS patients was detected (p<0.001). Analyses of the total MRC score reported similar

Results. The percentages of stance (area under curve, AUC: 0.6-0.7), double support (AUC: 0.6-0.7) position, and the time required to complete Timed Up and Go test (AUC: 0.6-0.7) were indicators of elevated muscle tone and positive pathological signs in lower limbs. None of gait parameters showed a good performance in recognition of pure upper motor neuron (UMN) involvement or lower motor neuron (LMN) involvement in lower limbs.

Conclusion: Compared to HC, ALS patients present narrower stride, slower pace, lower cadence, greater swing amplitude of upper limbs during walking. Gait parameters can act as indicators for ALS disease severity. Several gait parameters can reflect the degree of involvement of UMN and LMN in ALS.

The study was approved by the Ethics Committee of the Peking Union Medical College Hospital (PUMCH) (JS1210).

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Abstract Theme:
Muscular Dystrophy

Abstract Title:
Miyoshi Muscular Dystrophy Type 3: The First ANO5 Mutation Case from Pakistan

Background:
Miyoshi Muscular Dystrophy Type 3 (MMD3) is a rare autosomal recessive myopathy caused by ANO5 mutations, characterized by progressive proximal and distal muscle weakness with elevated creatine kinase (CK) levels. It often mimics inflammatory myopathies such as polymyositis, leading to misdiagnosis and inappropriate immunosuppressive treatment. This case highlights the diagnostic challenge MMD3 presents, especially in high-consanguinity populations, and emphasizes the need for early genetic testing in atypical myopathies to prevent mismanagement and therapeutic delay.
Methods:
This is a single-patient case report. A comprehensive clinical workup was performed, including neurological examination, serial CK measurements, myositis antibody panel, muscle MRI, and muscle biopsy. Empiric immunosuppressive therapy was administered. Due to limited treatment response, whole exome sequencing (WES) was ultimately pursued.
Results:
A 45-year-old male born to first-cousin parents had longstanding lower limb weakness, difficulty rising, exertional myalgias, and functional decline. Examination showed MRC 3/5 hip flexor weakness with diminished reflexes; CK ~3,900 IU/L. MRI revealed muscle edema; myositis serology was negative. Biopsy showed fiber-size variation and increased connective tissue without inflammatory infiltrates, indicating dystrophy. Empiric corticosteroids transiently reduced CK from ~3,900 to 1,390 IU/L, likely from edema reduction, delaying genetic diagnosis and risking harm. WES confirmed a homozygous ANO5 nonsense variant (c.2116C>T, p.Arg706Ter); family screening identified his father as a heterozygous carrier.
Conclusion:
This case highlights the critical role of early genetic testing in distinguishing muscular dystrophies like Miyoshi Muscular Dystrophy Type 3 from inflammatory myopathies in patients with chronic muscle weakness, elevated CK, and non-inflammatory biopsy findings, especially in consanguineous populations. Timely inclusion of genes such as ANO5 in diagnostic workups can prevent years of misdiagnosis, ineffective treatments, and avoidable harm. Improving clinician awareness, expanding access to affordable genetic testing, and implementing context-sensitive diagnostic protocols are essential. Long-term, integrating muscular dystrophy gene panels into national newborn screening programs could enable earlier recognition and more effective management.
At this stage, ethical approval is not applicable. Since this is not a full-length study yet, formal ethical clearance was not required. However, for any extended or in-depth version of the project, I understand that ethical approval will be necessary and will be obtained accordingly from the patient.

EP40

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Abstract Theme:
Genetic/ Molecular Approaches

Abstract Title:
Genetics of Neuromuscular Disease in Patients from Northern Pakistan

Background:

Neuromuscular disorders (NMD) often have a genetic etiology. Recent technological advances have transformed the practice of genetic testing. To solve the puzzle of overlapping symptoms or multiple genetic etiologies for neuromuscular conditions, Next Generation Sequencing (NGS) based multi-gene panels have made it possible to test for many related genes simultaneously.

Methods:

This study was approved by IRB & Ethical Committee of National University of Medical Sciences (NUMS), Rawalpindi. Data presented here is of patients that were recruited between December 2020 to March 2024. Patients were clinically diagnosed with a neuromuscular condition by neurologists at different hospitals of Rawalpindi/Islamabad. They were subjected to any one of the three multigene panels for genetic testingvariant of uncertain significance including Comprehensive Neuromuscular Disorders Panel (230 genes), Comprehensive Neuropathies Panel (74 genes), and Comprehensive Muscular Dystrophy Panel (60 genes) from Invitae, USA.

Results:

A total of 48 patients with clinically diagnosed neuromuscular disorders were enrolled. They belonged to Northern Punjab, KPK, AJ & K and GB regions of Pakistan. Twenty five patients tested positive for pathogenic/likely pathogenic variants. However, after investigation within families, the exact genotype-phenotype correlation was established in 20 patients/families. The rest of the patients either had Variants of Uncertain Significance (VUS) or they were carriers of pathogenic /likely pathogenic recessive variants. Very few of them had negative **Results**. Frequently identified genes include DYSF, GNE, SMN1, CHRNE, CLCN1, and CAPN3.

Conclusions:

Genetic testing with targeted panel sequencing has great potential but it cannot solve a significant number of cases. Whole Exome Sequencing (WES) may be the next step in these patients/families. Our Results emphasize the role of genetic testing, specially WES in neuromuscular diseases and we propose an early referral to geneticists for establishing a diagnosis.

Keywords:
Neuromuscular Disease, Genetic Testing, Next-Generation Sequencing

National University of Medical Scineces (NUMS), Rawalpindi (IRB# NUMSPVC-20/R&D/ORIC/IRB&EC (4th May, 2020), Valid till 16 March 2025.

EP41

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Abstract Theme:
Myositis

Abstract Title:
Persistent Truncal Exanthema as an Early and Prognostic Indicator in Anti-HMGCR Myopathy

Background:

Antibodies to 3-hydroxy-3-methylglutaryl-coenzyme A reductase (HMGCR) form a newly identified distinct serological marker for immune-mediated necrotizing myopathy (IMNM). Although cutaneous involvement has been observed, its clinical and histopathological features remain under-recognized. Importantly, the presence and evolution of skin lesions may correlate with treatment response and disease prognosis, yet this has not been systematically explored.

Methods:

We retrospectively reviewed the clinical, histopathological, and follow-up data of eight patients with anti-HMGCR myopathy presenting with persistent non-dermatomyositis-like exanthema, followed in the neurology and dermatology clinics of Huashan Hospital between December 2020 and July 2025.

Results:

All patients exhibited persistent violaceous or erythematous plaques on the trunk, either asymptomatic or mildly pruritic. Dermatomyositis-specific lesions were absent. In five patients, rash preceded muscle symptoms - including fatigue, proximal weakness, and hyperCKemia—by a median of 2.5 years (range: 8 months to 7 years). Biopsies revealed dermal

interstitial mucin, mild interface changes, and perivascular lymphocytic infiltrate, occasionally with plasma cells or neutrophils. Most patients showed marked improvement or complete resolution of skin lesions after systemic immunosuppressive therapy. However, two patients showed poor cutaneous response: one had persistent rash despite control of muscle enzymes with ofatumumab, mycophenolate mofetil, and intermittent IVIG; another, who had fluctuating CK despite combination immunosuppression and IVIG, developed new truncal rash four years after onset, even after switching to Efgartigimod.

Conclusion:
Persistent truncal exanthema with mucin deposition may be an early or evolving sign of anti-HMGCR myopathy. Skin lesions may reflect disease activity, and poor cutaneous response to immunotherapy could indicate treatment resistance, warranting close multidisciplinary evaluation.

Approved by the Institutional Review Board of Huashan Hospital, Fudan University (HIRB), Approval No. KY2025-025, dated January 24, 2025.

EP42

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Abstract Theme:
Muscular Dystrophy

Abstract Title:
Genotypic-Phenotypic Characterization and Circulating miRNA Biomarkers of Facioscapulohumeral Muscular Dystrophy Type 1

Background:
Facioscapulohumeral muscular dystrophy (FSHD) is the third most common hereditary muscular dystrophy. The predominant form, FSHD1, exhibits high clinical variability, underscoring the need for local characterization and the development of non-invasive circulating biomarkers, such as miRNAs, for early diagnosis and monitoring.

Methods:
Ninety-two participants in Hong Kong with suggestive symptoms or family history of FSHD were recruited between March 2021 and July 2024. FSHD1 was confirmed by molecular combing or Southern blot. Patients completed a symptom survey, FSHD clinical score assessment, and facial weakness characterization. Plasma samples from 11 FSHD1 patients and 5 healthy controls underwent miRNA profiling to identify potential biomarkers.

Results:
Seventy-three participants (43 males, 30 females) were genetically diagnosed with FSHD1. The estimated local prevalence was 9.69 per million, higher in males (12.6 per million) than females (7.29 per million). Mean ages of symptom onset and diagnosis were 23.5 ± 15.5 and 45.8 ± 17.9 years, respectively. Shoulder weakness was the most common symptom (80.6%). Twenty-four percent were wheelchair-mobile, and two required invasive ventilatory support. The average FSHD clinical score was 8.05 ± 4.47, with 61.4% (n=35/57) severely affected (score >8). The number of D4Z4 repeat units weakly correlated with age of onset ($\rho=0.375$, $p=0.002$) and moderately with clinical score and age at assessment ($r=-0.506$, $p<0.001$). Three miRNAs were dysregulated in patient plasma versus controls: miR-133a-3p (AUC=1) and miR-206 (AUC=1), both upregulated; miR-455-5p (AUC=0.75), downregulated. Among patients with 3 D4Z4 repeats, miR-206, miR-431-3p, and miR-494-5p were upregulated in those with FSHD clinical score >10.

Conclusion:
This study defines the prevalence of FSHD1 in Hong Kong and identifies two miRNAs (miR-133a-3p, miR-455-5p) as potential diagnostic markers,

and two (miR-431-3p, miR-494-5p) associated with disease severity for further research.

Patients involved in this study are recruited through the NMD patient registry or FSHD study. HKU IRB/ HKWC IRB Committee (UW19-356, date: 05/06/2019 to 01/07/2027) and (UW-21-009, date: 03/01/2021 to 17/01/2023).

EP43

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Abstract Theme:
Muscular Dystrophy

Abstract Title:
Duchenne Muscular Dystrophy in the Context of Chromosomal Abnormalities: Rare Case Presentations with Down Syndrome and Turner Syndrome

Background:
Duchenne muscular dystrophy (DMD) is an X-linked neuromuscular disorder caused by mutations in the DMD gene. Co-occurrence with chromosomal abnormalities is rare and presents unique diagnostic and therapeutic challenges. This study describes two rare cases of DMD in individuals with Down syndrome (DS) and mosaic Turner syndrome (TS), highlighting the diagnostic complexities and clinical implications of dual genetic diagnoses.
Methods:
We retrospectively reviewed clinical data, laboratory findings, genetic testing, and muscle biopsy **Results** of two patients with confirmed DMD and coexisting chromosomal abnormalities treated at Siriraj Hospital.
Results:
Case 1 involved a 5-year-old boy with DS (47,XY,+21), referred for persistently elevated transaminases following COVID-19 infection. Workup revealed a CK level of 13,710 U/L, while liver investigations were unremarkable. MLPA detected a hemizygous pathogenic DMD variant (c.3917dup; p.Asp1307Argfs*4), confirming the diagnosis of DMD.
Case 2 was a 6-year-old girl presenting with progressive muscle weakness and a CK level of 15,147 U/L. She had short stature, pectus excavatum, calf pseudohypertrophy, and proximal muscle weakness without dysmorphic features. MLPA identified a heterozygous deletion of exon 61 in DMD, and further analysis revealed a de novo 12–amino acid insertion in exon 61. Karyotype analysis demonstrated mosaic TS (45,X/46,XX), with 45,X present in 29% of cells. Both muscle biopsies showed dystrophic changes. Corticosteroid therapy was initiated in both cases. Diagnostic delays were attributed to overlapping and atypical features related to the chromosomal disorders. A literature review of previously reported DMD cases with DS and TS is summarized in the accompanying tables.
Conclusions:
These cases highlight the need for high clinical suspicion of neuromuscular disorders in patients with chromosomal abnormalities who present with atypical motor regression. Comprehensive genetic evaluation, including the possibility of dual diagnoses, is essential for accurate diagnosis and individualized management.
Approved by the Siriraj Institutional Review Board (COA no. Si 403/2025), dated 8 May 2025.

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Abstract Theme:
Hereditary Neuropathy

Abstract Title:
Skeletal muscle: a non-negligible targeted organ in hereditary transthyretin amyloidosis, a pathological study

Background:
Autosomal dominant inheritance disorder caused by the variant transthyretin (TTR) gene is the most common cause of hereditary transthyretin amyloidosis(hATTR). Patients with hATTR usually present with length-dependent sensory-motor polyneuropathy. While the positive rate of amyloid deposition in nerve biopsy is not high in this disease. We aim to perform the muscle biopsies to highlight the muscle involvement in hATTR.
Methods:
Clinical data was collected from thirty-three patients with hATTR. Muscle biopsies were taken for all patients for light and electron microscopy examination. Some patients performed immunofluorescence and immunoelectron microscopy examination. All hATTR patients were finally diagnosed by TTR gene confirmed.
Results:
Amyloid deposits were observed in 73%（24/33）of patients with Congo-red staining and its characteristic apple-green birefringence under polarized light microscopy in muscle biopsy. The sites of amyloid deposits were strongly immune-stained with the anti-TTR antibody and C5b-9. The co-localization of TTR and C5b-9 deposits was further confirmed by immunofluorescence staining. It was proved that there was TTR deposits in amyloid filaments, but no λ light chain by immunoelectron microscopy.
Conclusions:
Our study emphasized the importance of muscle biopsy in diagnosis of amyloid deposit in hATTR patients. The comb-tooth like co-localization of TTR and Cb5-9 indicated the potential mechanism of complement and possible therapies of hATTR.

Name：Biomedical Research Ethics Committee, Peking University First Hospital
Number：2024研-095-002
Date：2024/03/29
Validity of approval:2025/03/28

EP45

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Abstract Theme:
Pathogenesis

Abstract Title:
Dynamic changes in excitability and morphology of sporadic and SOD1-related amyotrophic lateral sclerosis iPSC-derived motor neurons

Background:
In the study, we aim to explore the dynamic changes in excitability of iPSC-derived motor neurons from sporadic ALS and SOD1-related ALS patients using patch-clamp techniques. Furthermore, immunofluorescence staining will be employed to examine morphological alterations and apoptosis in ALS motor neurons at different cultivation stages. We hope to further elucidate the characteristics and mechanisms of motor neuron excitability dysfunction in ALS, establish an iPSC-based model for sporadic ALS research, and shed new lights for future studies.Both healthy donor-derived iPSC-derived motor neurons and those from patients with SOD1 pathogenic mutations or sporadic ALS exhibit normal physiological characteristics. We performed immunofluorescence detection of motor neuron markers in motor neurons (MNs) differentiated from induced pluripotent stem cell (iPSC) lines derived from SOD1 mutant, sporadic ALS patients, and healthy controls. The positivity rates for HB9 and TUJ1 were comparable, and the MN yield was similar (>50% TUJ1/HB9 double-positive MNs). Using whole-cell patch-clamp technology, we found that SOD1 exhibited earlier

increases in excitability and action potential firing (2–4 weeks), and in the early stage (4–6 weeks), SOD1, sALS-derived MNs exhibited higher excitability than healthy-derived MNs, and the firing frequency of SOD1 was significantly higher than that of sALS-derived MNs. By the late stage (7–9 weeks), all iPSC-MNs from all sources exhibited reduced action potential output and excitability. SOD1 and sALS excitability were indistinguishable and both remained higher than the healthy control group. TUNEL assay Results showed that MN apoptosis rates increased with prolonged culture duration, with ALS-derived MNs exhibiting consistently higher apoptosis rates than healthy-derived MNs, and SOD1 showing a marked increase in apoptosis rates in the early phase. This excitability change in MNs parallels the apoptosis trends across the three groups. Immunofluorescence detection Results indicated that the soma area of ALS-derived MNs was smaller than that of healthy-derived MNs. Previous studies have shown that a reduced soma area in MNs may enhance excitability. These dynamic changes in MN excitability and apoptosis rates suggest that early dysfunction or loss of ion channel function may be a key convergence point, potentially triggering downstream degenerative pathways leading to MN death in ALS patients. All subjects have provided written informed consent and generation of iPSC lines was approved by the Peking union medical college hospital.Number:I-24YSB1477 Date:2024.09.04

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Abstract Theme:
Muscular Dystrophy

Abstract Title:
New genotype-phenotype correlations and transcriptomic findings in limb-girdle muscular dystrophy R9

Objective:
Limb-girdle muscular dystrophy R9 (LGMDR9) cannot be fully explained by α-dystroglycan hypoglycosylation alone. We aimed to comprehensively investigate the clinical, genetic, muscle imaging and pathological characteristics of limb-girdle muscular dystrophy R9 (LGMDR9) in a large cohort of Chinese patients. In addition, we sought to delineate the muscle transcriptomic landscape of LGMDR9, which has not been investigated.
Methods:
In total, 44 genetically confirmed Chinese LGMDR9 patients were enrolled. They underwent a detailed clinical, imaging, and pathological assessment, followed by customized bioinformatics analyses of genome-wide transcriptome data.
Results:
LGMDR9 patients presented with heterogeneous clinical manifestations, including hyperCKemia without weakness (n=15), as well as mild (n=11), moderate (n=7), and severe (n=11) weakness subgroups determined by hierarchical analysis. Eleven of the 35 pathogenic FKRP variants identified in our cohort were novel, with the c.545A>G variant being the most common found in 72.7% (32/44) patients. Hierarchical analysis revealed that 15 patients harboring null variants (frameshift, nonsense, and large deletions) exhibited a more severe phenotype compared to those with missense/inframe variants in FKRP. Muscle biopsy showed a dystrophic pattern in 19 patients, necrotizing myopathy in 5 patients, and mild myopathic changes in 9 patients. Muscle magnetic resonance imaging analysis showed a concentric pattern of fatty infiltration in 60.7% (17/28) patients. Transcriptomic profiling of 12 muscle samples showed significant upregulation of genes related to inflammation/immune response and extracellular matrix remodeling ($P < 0.05$). Furthermore, weighted gene co-expression network analysis identified a "turquoise" module enriched in immune cell proliferation and inflammatory markers, which were strongly correlated with histopathological inflammatory scores validated by immunohistochemical staining.
Conclusion:
Our findings indicate that null variants in FKRP may be associated with a severe phenotype. We

also provide the first transcriptomic and experimental evidence of an immune-activated inflammatory microenvironment in LGMDR9 muscle tissue, which support the potential utility of immunomodulatory therapies in managing this condition.
This study was approved by the Ethics Committee at Peking University First Hospital (approval number: 2023 109-002).

EP47

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Abstract Theme:
Spinal Muscular Atrophy

Abstract Title:
Emerging Biomarkers for Early Diagnosis of Spinal Muscular Atrophy: A Narrative Review

Background:
Spinal Muscular Atrophy (SMA) is a leading genetic cause of
infant mortality, driven by SMN1 gene mutations. Early diagnosis is critical for
effective intervention, yet current diagnostic Methods often delay treatment.
This review examines emerging biomarkers for SMA to enhance early
detection and improve patient outcomes.
Methods:
A literature search was performed using PubMed and Embase,
covering studies from 2015 to 2024. Search terms included "spinal muscular
atrophy," "biomarkers," and "early diagnosis." We included studies on blood-
based, cerebrospinal fluid (CSF), and imaging biomarkers, focusing on their sensitivity, specificity, and clinical applicability.
Results:
Neurofilament light chain (NfL) in CSF has shown 90% sensitivity for
SMA detection in pre-symptomatic infants, correlating with disease severity. Blood-based microRNAs, such as miR-206, demonstrate 85% specificity in SMA type 1 patients, offering a non-invasive alternative. Imaging biomarkers, like MRI-based muscle volumetry, detect atrophy before clinical symptoms but lack standardization. Despite these advances, cost and accessibility remain barriers in low resource settings.
Conclusions:
Emerging biomarkers like NfL and miR-206 hold promise for
early SMA diagnosis, enabling timely interventions like nusinersen therapy.
Future efforts should focus on standardizing assays and improving access in
diverse populations.
Not Applicable

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Abstract Theme:
Myotonic Dystrophy

Abstract Title:
Mitochondrial Therapeutics in Myotonic Dystrophy: A Narrative Review

Background:
Myotonic Dystrophy (DM) features muscle wasting linked to
mitochondrial dysfunction and RNA toxicity. Mitochondrial-targeted therapies,

such as antioxidants and coenzyme Q10, aim to mitigate oxidative stress and
improve muscle function. This review assesses the efficacy of mitochondrial
interventions in DM management.
Methods:
Data were extracted from 15 peer reviewed studies via PubMed and Scopus (2015–2025) including randomized trials and cohort analyses, focusing on studies of mitochondrial therapies in DM1 and DM2. Search terms included "mitochondrial therapy," "myotonic dystrophy," and "oxidative stress." Outcomes on muscle strength, fatigue, and safety were analyzed.
Results:
Studies show a 30% reduction in oxidative stress markers with
coenzyme Q10 in DM1 patients. MitoQ therapy improved muscle endurance by 25% in small trials, though sample sizes were limited. Long-term efficacy and optimal dosing remain unclear due to inconsistent trial designs.
Conclusions:
Mitochondrial therapeutics offer a novel approach to manage
DM, with preliminary evidence of benefit. While cited trials demonstrate promise, further large-scale studies are needed to validate these findings.
Keywords: Myotonic Dystrophy, mitochondrial therapy, oxidative stress,
muscle function, antioxidants.
Not Applicable

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Abstract Theme:
Muscular Dystrophy

Abstract Title:
Imaging features of skeletal muscle and their correlation with clinical findings in Emery-Dreifuss muscular dystrophy caused by EMD variants

Background:
Variants in the EMD gene cause Emery-Dreifuss muscular dystrophy type 1 (EDMD1). Skeletal muscle imaging plays a crucial role in diagnosing and studying neuromuscular diseases. This study aimed to comprehensively characterize the distribution of fatty replacement throughout the body in EDMD1 and clarify its relationship with clinical manifestations.
Methods:
We analyzed whole-body MRI data from eight Japanese patients with genetically-confirmed EDMD1. The extent of fatty replacement in 47 skeletal muscles was scored using the modified Mercuri score (mMS). Hierarchical clustering was applied to classify imaging patterns and to compare the extent of muscle involvement between clusters.
Results:
Prominent fatty replacement was commonly observed in the soleus, medial and lateral gastrocnemius, multifidus, iliocostalis lumborum, longissimus, thoracic paraspinal, and cervical paraspinal muscles. As the disease progressed, increased fatty replacement was seen in the adductor magnus, serratus anterior, biceps brachii, semitendinosus, semimembranosus, and long head of the biceps femoris. These findings corresponded well with worsening clinical symptoms such as early-onset ankle and elbow joint contractures and gait disturbances. Stratification by EMD variant types revealed a correlation between age and total mMS.
Conclusions:
In patients with EDMD1, fatty replacement was commonly observed in the paraspinal and gluteal muscles, consistent with previous reports. Muscles such as the biceps brachii, which exhibit progressive fatty replacement, may serve as practical indicators for monitoring disease progression. The rate muscle involvement varied according to the underlying genetic variant, and the extent of fatty replacement correlated with clinical severity.
NCNP Ethics Committee (approval number: A2022-045)

EP50

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Abstract Theme:
Myasthenia Gravis

Abstract Title:
Modulated Immune Landscape and Improved Clinical Outcome by Tofacitinib in Refractory Generalized Myasthenia Gravis

Objective:
Refractory myasthenia gravis (MG) lacks effective treatments. This study explores JAK-STAT signaling's role in MG and evaluates tofacitinib's efficacy and mechanisms.
Methods:
Single-cell RNA sequencing compared MG patients and healthy controls. Nineteen refractory MG patients received tofacitinib (5mg bid) plus steroids for 24 weeks. Clinical outcomes (MG-ADL, QMG, MGC, MG-QOL15), AChR antibody titers, and cytokines were monitored. RNA-seq, flow cytometry, and in vitro assays assessed immune modulation.
Results:
Transcriptomic analysis revealed that CD4+ T cells from MG patients exhibited significantly elevated expression of Th17 cell differentiation-related signaling pathways and the key molecule JAK2 compared to healthy controls. After 24 weeks of tofacitinib treatment, refractory MG patients showed significant clinical improvements: 1) Glucocorticoid resistance was markedly alleviated, with the average daily dose of prednisolone acetate reduced by 13.68 mg (SE 1.81) compared to baseline ($p < 0.01$); 2) Disease activity was significantly reduced, with MG-ADL scores decreasing by an average of 3.6 points (SE 0.78) ($p < 0.001$) and QMG scores decreasing by an average of 6.2 points (SE 1.51) ($p < 0.001$). Mechanistic studies demonstrated that tofacitinib likely inhibits the phosphorylation of STAT3, thereby reducing the expression levels of pro-inflammatory cytokines IL-6 and IL-23 and effectively suppressing the function of pathogenic Th17.1 cells. Concurrently, it promoted the expansion of immunoregulatory cell subsets such as regulatory T cells (Tregs) and regulatory B cells (Bregs), thereby restoring immune homeostasis in MG patients.
Conclusion:
In this 24-week prospective study, we demonstrated that tofacitinib significantly improves clinical symptoms and enhances glucocorticoid sensitivity in refractory MG patients. Tofacitinib improves refractory MG by inhibiting pathogenic Th17.1 and enhancing immune regulation, supporting its potential as a targeted therapy for MG.

(2024) Linshen No. (1310), Huashan Hospital Institutional Review Board (HIRB), Fudan University, November 12, 2024, valid for 1 year.

EP51

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Abstract Theme:
Myasthenia Gravis

Abstract Title:
Early Use of Rituximab in Myasthenia Gravis in a resource-limited setting: A Retrospective Cohort Study from a Tertiary Center in Pakistan.

Background:
Myasthenia gravis (MG) is an autoimmune disorder of the neuromuscular junction, most mediated by acetylcholine receptor antibodies. Standard treatments include corticosteroids, acetylcholinesterase inhibitors, and conventional immunosuppressants, while IVIg or plasma exchange is reserved for refractory cases or

crises. Rituximab, a CD20-targeting monoclonal antibody, has shown efficacy in treatment-resistant MG, particularly MuSK-positive cases. However, its early use—before crisis—remains underexplored, especially in resource-limited settings where IVIg and frequent hospitalizations are often inaccessible. This study evaluates the efficacy and safety of early rituximab use in such settings.

Methods:
In this retrospective cohort study (Dec 2021–June 2024), 12 patients with generalized MG were treated with rituximab and followed for 12 months. Clinical outcomes, including MGFA-Post Intervention Status, corticosteroid dose reduction, and adverse effects, were assessed.

Results:
Seven patients had a history of myasthenic crisis before rituximab; only one had a recurrence after treatment. Overall, 91.7% showed significant clinical improvement or reduced need for symptomatic and immunosuppressive therapy. At 12 months, MGFA post-intervention status indicated complete stable remission in 10%, pharmacologic remission in 90%, and minimal manifestations in 20%. Mean corticosteroid doses dropped by 22.5 mg after the first rituximab cycle and 16.4 mg after the second. Seventy-five percent experienced no major treatment-related complications.

Conclusion:
Early rituximab use in generalized MG appears effective and steroid-sparing, with potential to lessen disease burden and healthcare costs in resource-constrained settings.

Approved for ERC exemption on 21.07.2024 by Aga Khan University Hospital - 2024-10333-30030

EP52

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Abstract Theme:
Hereditary Neuropathy

Abstract Title:
Clinical and Genetic Features of Charcot-Marie-Tooth Disease Type 4B in a Cohort of Chinese Patients

Background and Objectives:
Charcot-Marie-Tooth disease type 4B (CMT4B) is a rare, severe subtype of CMT caused by mutations in the myotubularin-related protein (MTMR) family genes: MTMR2 (CMT4B1), SBF2/MTMR13 (CMT4B2), and SBF1/MTMR5 (CMT4B3). This study aimed to identify CMT4B-related genetic mutations and characterize their clinical manifestations in a Chinese cohort

Methods:
In this study, we screened for CMT4B-related mutations using whole-exome sequencing in a Chinese CMT cohort consisting of 909 families. Clinical manifestations and genetic features were summarized.

Result:
In our CMT cohort, five families (seven patients) with CMT4B were identified, accounting for 0.55% (5/909) of the cohort, including two CMT4B1 families, one CMT4B2 family, and two CMT4B3 families. Seven MTMR mutations were identified, including novel variants: MTMR2 c.1539del and c.304C>T, MTMR13 c.3110G>A, and MTMR5 c.608C>T, c.5470C>T, and c.4468T>G. CMT4B1/2 patients showed early-onset demyelinating neuropathy with developmental delay and severe symptoms, while CMT4B3 presented milder progression with both demyelinating and axonal features. Vocal cord paralysis or hoarseness occurred in one CMT4B1 and one CMT4B2 patient. Nerve biopsies in two CMT4B3 patients showed redundant myelin thickening in both, but one also exhibited demyelination with myelin out-folding, and the other showed axonal damage. Muscle MRI revealed predominant fatty infiltration (FF) in the posterior thigh muscle compartment.

Conclusion:
This study expands the mutational and clinical spectrum of CMT4B by identifying six novel MTMR5 mutations, supporting their association with both demyelinating and axonal phenotypes, and reveals predominant fat infiltration in the posterior thigh muscles in an affected family.
This study was approved by the Ethics Committee of the Third Xiangya Hospital of Central South

University (Ethics Approval No.024-S601) and obtained written informed consent from all participating individuals.

EP53

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Abstract Theme:
Registry

Abstract Title:
Genetic Spectrum of Duchenne Muscular Dystrophy: Insights from Pakistan's First National Muscular Dystrophy Registry.

Background:
Duchenne muscular dystrophy (DMD) is a progressive neuromuscular disorder with substantial disease burden and limited access to care in low- and middle-income countries. For Pakistan, there is no national data on genetically confirmed DMD cases till date. This study presents findings from Pakistan's first national DMD registry and characterizes the genetic profiles of affected patients.

Methods:
In this retrospective study, we enrolled 130 patients with genetically confirmed DMD through a nationwide telephonic survey. MLPA-based genetic testing was performed at the country's sole certified molecular lab. Associations between clinical features, consanguinity, and mutation type were analyzed using chi-square testing.

Results:
The cohort was predominantly male (98.5%, n=128). 114 deletions (both large and small) were reported in this database. Large dystrophin gene mutations were reported in 76.2% (n=99) cases, most commonly deletions localized to the distal hotspot region (exons 45–55) (n=86, 66.2%). Single exon deletions of 44, 45, 51, and 52 were most frequent. 16 duplications (both large and small) were reported in this database. The most-frequently observed exon duplications included a small duplication involving exon 2 and a large duplication involving exons 8-43. The majority of duplications occurred within the proximal hotspot of the dystrophin gene (81.0%, n=13).

Conclusion:
Consistent with global literature, we found that deletions of the dystrophin gene predominantly occurred in the distal hotspot, while duplications were more frequent in the proximal hotspot (4,21–24). Our findings highlight the prevalence of large deletions in the dystrophin gene and a potential link between consanguinity and disease severity. The lack of widespread access to MLPA testing and non-pharmacological therapies emphasizes the need for improved healthcare infrastructure in Pakistan. The creation of this registry marks a foundational step towards improving expanding genetic screening, and advocating for novel therapies for DMD patients in Pakistan and other underserved regions.

Aga Khan University Hospital's Institutional Review Board (5369-Med-ERC-18) and the University of North Carolina at Charlotte's Institutional Review Board (IRB 18-0444).

EP54

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Abstract Theme:
Myasthenia Gravis

Abstract Title:

Asymmetric Pattern in Seropositive Myasthenia Gravis – A Case Report

Background:
Myasthenia gravis (MG) is an autoimmune neuromuscular disorder typically involving proximal and symmetrical muscle groups. Distal or unilateral presentations are exceedingly rare, especially in acetylcholine receptor (AChR)-positive cases.
Case presentation:
Herein, we report a rare case of a 19-year-old right-handed Asian female with no known comorbidities, who presented to the outpatient clinic with a 4-month history of reduced muscle strength (Medical Research Council grade 3/5), particularly affecting deltoid and distal extensor muscles. Over subsequent weeks, she developed binocular diplopia, dysphagia, and dyspnea, symptoms that fluctuated and improved with rest. Clinical examination revealed fatigable right arm weakness, nasal speech, and fatigable diplopia without ptosis. Lower limb strength and reflexes were normal. Previous examinations by ophthalmology, gastroenterology, and otolaryngology specialists did not provide a conclusive diagnosis, but given the neurological clinical presentation, a clinical diagnosis of generalized MG (MGFA Class IIIa) was considered. Electromyography (EMG) and Nerve Conduction Studies (NCS) confirmed a decremental response consistent with MG, and serum AChR antibodies were elevated. MuSK antibodies, brain and spinal MRI, lumbar puncture, and autoimmune panels (ANA, ANCA, ENA) were unremarkable, ruling out alternative neuromuscular, inflammatory, and structural causes. Chest computed tomography (CT) scan was performed to exclude thymoma, which showed no masses. Despite multiple immunotherapies including corticosteroids, azathioprine, mycophenolate mofetil, and residual mild distal weakness persisted, responding to pyridostigmine.
Conclusion: This case expands the spectrum of atypical myasthenia gravis manifestations, emphasizing the need for clinicians to maintain a high index of suspicion, particularly in cases of isolated chronic distal arm weakness, to reduce investigative costs and morbidity. Continued case reporting will deepen clinical understanding and reinforce the importance of considering MG in the differential diagnosis of refractory asymmetric or isolated distal weakness.
Keywords: Myasthenia gravis; Atypical myasthenia gravis; Distal myasthenia gravis; Refractory myasthenia gravis

Since this is a case report, an ethical approval was not required. However, a written consent was obtained from the patient.

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Abstract Theme:
Other

Abstract Title:
"EFFECT OF NURSE-LED INTERVENTION ON KNOWLEDGE AND PRACTICE OF NURSES IN PREVENTING NEEDLE STICK INJURIES"

Background:
Needle-stick injury is an occupational hazard, and it presents a constant risk of exposure to bloodborne pathogens. The increasing prevalence of needle stick injuries among nurses leads to the need to pay attention to improving their knowledge and practice by using nurse-led educational intervention.
Objective: The present study aimed to examine the effect of nurse-led intervention on the knowledge and practice of nurses in preventing needle stick injuries.
Methods:
This quasi-experimental study was conducted on 152 nurses working in a private tertiary care hospital in Karachi. Study participants were selected using a non-probability purposive sampling technique and were divided into two groups such as interventional and a control group. The intervention included teaching and hands-on practice sessions. Before and after the intervention, the nurses of both groups filled out

the validated questionnaire. The data was analyzed using SPSS software version 24. Mann-Whitney U test and Wilcoxon signed-rank test were used to analyse the data. A p-value ≤0.05 was considered a level significance.

Results:

The majority (85.5%) of the study participants were females and their median and IQR age was 25(2) years in the control group. In interventional group, 73.7% of the participants were females and their median age was 25(3) years. Approximately two-thirds 51 (67.1%) of the study participants had a low and 25 (32.9%) had a moderate level of knowledge in the pre-intervention phase. After intervention, 57 (75%) of the study participants knowledge reported as a high and it is found statistically significant (p-value<0.001).

Conclusion:

It is concluded that nurse-led intervention is an effective method in training programs to enhance the nurses' knowledge regarding needle-stick injury.

Keywords: Nurse-led intervention, Nurse, Prevention, Knowledge, Practice, Needle Stick Injury

ZIAUDDIN ERC DEPARTMENT Approval

EP56

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Abstract Theme:
Pathogenesis

Abstract Title:
TEMPORAL TRENDS OF ALZHEIMER'S DISEASE IN ADULTS WITH TYPE 2 DIABETES MELLITUS IN THE UNITED STATES FROM 1999-2020: INSIGHTS FROM CDC WONDER DATABASE

Background: Alzheimer's disease (AD) is a highly prevalent neurodegenerative disorder associated with significant morbidities and mortalities in patients with Type 2 diabetes mellitus (DM).

Objective: To assess disparities existing in mortalities related to Type 2 DM among AD patients in the United States of America (USA) based on age, gender, race, and geographic region.

Methods:

We conducted a comprehensive retrospective analysis of the CDC WONDER mortality data from 1999 to 2020 for individuals aged ≥25 years. AD and Type 2 DM were identified using ICD-10 codes G30.9 and E11.9, respectively. Age-adjusted mortality rates (AAMR) per 100,000 were calculated, and trends were analyzed by gender, race, region and metropolitan status. Joinpoint regression was used to calculate annual percentage changes (APC) with 95 % confidence intervals (CI).

Results:

A total of 66,796 deaths were classified as attributable to AD and Type 2 DM during the study period. The AAMR exhibited an increase from 0.57 in 1999 to 1.13 in 2006 (APC: 9.27), with a slight change to 1.15 in 2015 (APC: -0.71), culminating in a notable rise to 1.92 in 2020 (APC: 9.80). Females exhibited higher overall AAMR compared to males (Females: 1.18 vs. Males: 1.14). Individuals of Hispanic or Latino ancestry had the highest AAMR (1.4), followed by NH Black or African American (1.22), NH White (1.13) and NH Asian or Pacific Islander (0.99). Geographically, South region showed the highest AAMR (1.56), while Northeast had the lowest (0.65). Rural areas had the highest AAMR (1.54) while Urban areas had the lowest (0.96).

Conclusion:

AD and Type 2 DM-related mortalities have risen significantly in recent years, with notable disparities across gender, race, and geographic regions. These findings highlight the urgent need for tailored public health strategies to mitigate the evolving burden of these diseases and promote equitable healthcare outcomes.

Keywords: Alzheimer's disease, Type 2 DM, mortality, trend.
Not Applicable

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Abstract Theme:
Muscular Dystrophy

Abstract Title:
CRPPA-related Muscular Dystrophy-Dystroglycanopathy: A Rare Congenital Muscular Dystrophy Associated with Brain and Eye Anomalies, and Early Death

Background and Findings:
We report a boy born to consanguineous Pakistani parents who presented with microcephaly, occipital encephalocele, and contractures of all four limbs, as well as congenital cataract, glaucoma, right retinal hole, and right optic nerve hypoplasia. Investigations revealed elevated serum creatine kinase (CK). Muscle biopsy showed dystrophic changes with absence of alpha-dystroglycan staining. Brain MRI demonstrated cobblestone lissencephaly, ventriculomegaly, corpus callosum dysgenesis, cerebellar hypoplasia with brainstem distortion, and posterior meningocele. Rapid exome sequencing identified homozygous variants of unknown significance (VUS) in the CRPPA gene (c.815C>I, p.Ala272Glu), associated with autosomal recessive muscular dystrophy-dystroglycanopathy. A ventriculo-peritoneal shunt was inserted, and the occipital encephalocele was repaired at 1 and 3 months of age, respectively. The patient subsequently developed infantile spasms, epilepsy, oropharyngeal dysphagia, and global developmental delay, and succumbed to aspiration pneumonia at 15 months of age.

Discussion
The CRPPA gene (MIM 614631, also known as ISPD) on chromosome 7p21 is implicated in the glycosylation of α-dystroglycan (α-DG). Proper glycosylation of α-DG is essential for binding to extracellular matrix components. Disrupted glycosylation leads to loss of these interactions, resulting in progressive muscle degeneration and abnormal neuronal migration in the brain.

Conclusion
CRPPA related muscular dystrophy-dystroglycanopathy can present as severe congenital muscular dystrophy associated with brain and eye anomalies, and early death. Early recognition is critical for diagnosis, management, and counselling.

Keywords:
Muscular dystrophy, Dystroglycanopathy, Lissencephaly, CRPPA, ISPD
Not applicable

EP58

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Abstract Theme:
Muscular Dystrophy

Abstract Title:
Comparative Effectiveness of Structured Physiotherapy vs. Usual Care for Motor Outcomes in Pediatric DMD: A Systematic Review

BACKGROUND:
Duchenne muscular dystrophy is an X-linked recessive disorder caused by dystrophin gene mutations, leading to progressive muscle degeneration. Primarily affecting boys, it's one of the most severe muscular dystrophies, occurring in 1 in 3,500 to 5,000 male births. Since no cure exists, treatments aim to improve quality of life. This study investigates whether aerobic exercise and physiotherapy can help slow decline and enhance daily function in DMD patients.

METHODS:
This systematic review followed PRISMA guidelines. Research used PubMed, Cochrane, and Google Scholar for studies focusing on how physiotherapy compares to usual care or no therapy in children with DMD. Study quality was evaluated using the Cochrane Risk of Bias Tool and the Newcastle-Ottawa Scale.
RESULT:
This review analyzed eight studies (7 randomized controlled trials and 1 observational study) in 341 DMD patients (6-10y). The analysis focused on motor function (measured by MFM scores, MDFRS, and timed tests), stability (abdominal muscle thickness), and respiratory outcomes (6-minute walk test), with functional ability and safety as secondary measures. Results showed the control group experienced a significant decline (Δ = -4.9, 95% CI: -7.6 to -2.2), while physiotherapy interventions demonstrated benefits—including improved 6-minute walk distance (increasing from 478.2 m to 502.6 m after 4 months, $p < 0.005$) and enhanced stability. Low-intensity aerobic exercise showed advantages in physical activity levels and lung function compared to controls.
CONCLUSION:
This systematic review demonstrates that structured physiotherapy and aerobic exercise significantly improve mobility, stability, and respiratory function in children with DMD. These evidence-based interventions effectively preserves physical function and enhance quality-of-life. While further research is warranted, current findings strongly support incorporating these therapies into standard DMD management protocols to prolong functional independence.
KEYWORDS:
Duchenne Muscular Dystrophy, Physical Therapy Modalities, Motor Activity, Treatment Outcome, Child

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Abstract Theme:
Genetic/ Molecular Approaches

Abstract Title:
Uncovering a Shared Founder Mutation in GNE Myopathy: Genetic Evidence of Historical Gene Flow from Persia to Japan

Background:
A rare founder mutation in Persian-Jewish GNE myopathy (GNEM) patients, p.M743T in the GNE gene, has also been found in unrelated Japanese individuals. This striking finding provides a unique opportunity to investigate ancient human migration and potential genetic links between Persia and Japan by using this ultra-rare mutation as a genetic marker.
Methods:
Whole-genome sequencing was performed for six Japanese and nine Iranian GNEM patients carrying p.M743T. Identity-by-descent analysis was conducted using Biobank Japan and Iranome reference datasets. Mutation age was estimated via DMLE+ Bayesian analysis. Chromosomal ancestry was evaluated through FLARE-based painting. Long-read sequencing was used to resolve the shared haplotype structure.
Results:
A shared haplotype spanning 1,543 kb in Japanese and 1,122 kb in Iranian GNEM patients carrying

the p.M743T mutation was identified in both populations. The estimated age of the mutation is 62 generations (range: 43–83; approximately 475 CE) in Japanese individuals and 71 generations (range: 56–88; approximately 250 CE) in Iranians. Long-read sequencing revealed a shared haplotype segment surrounding p.M743T in patients from both populations, which was absent in the general Japanese population. This finding raises the possibility that these patients share a common ancestor. Chromosomal painting classified Japanese carriers as East Asian, supporting the occurrence of gene flow at least 25 generations ago.

Conclusions:

These findings suggest that the Persian-Jewish founder mutation p.M743T observed in GNEM patients of Japanese descent originates from a common ancestor, indicating ancient genetic exchange. This supports the utility of founder mutations in ultra-rare diseases as markers for tracing deep historical population movements.

National Center of Neurology and Psychiatry, A2020-062, 2020/08/11 approved

EP60

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Abstract Theme:
Muscular Dystrophy

Abstract Title:
MULTISYSTEM INVOLVEMENT AND DISABILITY STATUS IN ADULT-ONEST MYOTONIC DYSTROPHY TYPE 1: A CHINESE SINGLE-CENTERED STUDY

Background:

Myotonic dystrophy type 1 (DM1) is the most common adult muscular dystrophy, characterized by progressive proximal muscle weakness and multisystem involvement, leading to early disability and increased mortality. The clinical spectrum and disability-causing events in Chinese DM1 patients remain underreported.

We retrospectively reviewed 133 adult-onset patients with genetically confirmed DM1 enrolled through questionnaire at Huashan Hospital, Fudan University. Baseline clinical information, DMPK gene CTG repeat length, Epworth Sleepiness Scale (ESS), Fatigue Severity Scale (FSS), pulmonary function test Results, EKG data, and disability-causing events—including walking disability, premature cataract, respiratory disability, heart disability, and swallowing disability—were collected and analyzed.

This cohort included 75 male and 58 female patients with an average diagnostic age of 41 years (17–69) and onset age of 31 years (0–60). Mean CTG repeats were 532 (53–1218). Average FSS and ESS scores were 33 and 12, respectively. The most common symptom was muscle weakness (85%), followed by fatigue (71%) and myotonia (67%). Multisystemic involvement was present in 96.03% of patients, mainly slurred speech (60%), daytime sleepiness (59%), and dysphagia (51%). Cardiac findings included premature beats (69%) and conduction block (25%). Mean predicted forced vital capacity (FVC), forced expiratory volume in 1 second (FEV1.0), and FEV1.0/FVC ratio were 72%, 71%, and 85%, respectively. CTG repeat length negatively correlated with FVC and FEV1.0 (both $P < 0.0001$). Disability-causing events were observed in 32.03%: 41.46% were walking-disabled (11.76% were wheelchair-bound), 29.26% had early-onset cataract or cataract surgery, 21.95% had respiratory disability (mechanical ventilation or respiratory failure), 17.07% underwent cardiac surgery, and 4.88% had involuntary swallowing disability. Additionally, 9.77% developed benign or malignant tumors, about one-third of which were thyroid-related. Disability events correlated with older age and longer disease duration ($P < 0.05$).

Multisystem involvement is common in Chinese adult-onset DM1 patients. Disability-causing events affected nearly a third of patients, highlighting the need for further natural history studies to understand disease progression.

This study was approved by the Ethics Committee of Huashan Hospital, Fudan University (approval number: KY2020-008, date of approval: 30/01/2020). The approval remains valid for the entire study period.

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Abstract Theme:
Acquired Neuropathy

Abstract Title:
Reemerging Diphtheria And Its Neurological Impacts In KPK: A Call For Strengthen Immunization .

Background:
Diphtheria, once largely controlled through vaccination, has seen a resurgence in under immunized regions including Khyber Pakhtunkhwa (KPK), Pakistan. Recent cases have shown that both children and adults are at risk, particularly those lacking routine booster doses. This study focuses on the neurological complications of diphtheria and highlights the role of waning immunity due to missed booster doses.
Methodology: A prospective observational study was conducted from November 2024 to April 2025 at Hayatabad Medical Complex, Peshawar. Ten patients with laboratory confirmed diphtheria were included: three pediatric (age 6 years to12years) and seven adults (age 15 to 55 years). Detailed data were collected on demographics, immunization status, neurological findings, treatment course, and outcomes.
Results:
Two patients were unvaccinated (20%), one had incomplete vaccination and all adult patients (70%) lacked booster vaccination. Neurological complications were observed in 8 patients (80%). Quadriparesis occurred in 5 (50%) cases 3 (30%) developed lower limbs weakness resembling Guillain Barre Syndrome. Bulbar palsy, characterized by dysphagia and nasal regurgitation, occurred in 5(50%) cases. Cranial nerve involvement (III,IV,IX,X) was also noted.
Conclusion:
The reemergence of diphtheria reflects not only lapses in routine childhood vaccination coverage but also a lack of sustained booster programs for adolescents and adults. The high frequency of severe neurological complications, particularly quadriparesis and bulbar involvement, needs urgent strengthening of routine and booster vaccination programs.
Keywords: Diphtheria, Immunization Programs, Neurologic Manifestations; Quadriparesis; Bulbar Palsy.
Eithical approval has been taken from IRB Hayatabad Medical Complex, Peshawar, Pakistan.

EP62

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Abstract Theme:
Motor Neuron Disease/ALS

Abstract Title:
TRAIL in Serum and CSF Predicts ALS Progression and Drives Neurodegeneration via Cell-Autonomous and Non-Cell-Autonomous Mechanisms

Background:
This study aimed to identify diagnostic and prognostic biomarkers for amyotrophic lateral sclerosis (ALS) and investigate TRAIL-mediated mechanisms as potential therapeutic targets.
Methods:
A prospective cohort of patients suspected of ALS was stratified into ALS (n = 113) and ALS-mimic groups (n = 62). Paired serum and CSF samples were analyzed using a 48-plex cytokine panel. Postmortem tissue, SOD1G93A mice, and human iPSC-derived motor neurons (iMNs) and microglia

(iMicroglia) were used to explore TRAIL expression and function. Functional assays assessed TRAIL-mediated neurotoxicity and therapeutic interventions.

Results:
A biomarker panel (CSF IL-4, MCP-1, SDF-1α, and serum TRAIL) robustly distinguished ALS from mimics (AUC > 0.90). TRAIL levels in serum and CSF were independently associated with poor prognosis and faster disease progression ($p < 0.0001$). High TRAIL predicted shorter survival (HR = 2.63–2.74). Transcriptomic data and single-cell RNA-seq confirmed TRAIL upregulation in ALS monocytes. DR4/DR5 receptors were detected in iMNs and iMicroglia. Functional experiments showed TRAIL induced iMN apoptosis via both cell-autonomous and microglia-mediated mechanisms. Blockade of TRAIL using anti-TRAIL antibodies or soluble DR5 significantly reduced neurotoxicity.

Conclusions:
TRAIL acts as both a biomarker and a pathogenic mediator in ALS, linking peripheral immune activation to central neurodegeneration. Inhibition of TRAIL signaling represents a novel therapeutic strategy warranting further preclinical and clinical investigation.

Keywords:
Amyotrophic Lateral Sclerosis; TRAIL; iPSC-derived Motor Neurons; Neuroinflammation

This study was approved by the Ethics Committee of the Peking Union Medical College Hospital (13207) and Qilu Hospital (KYLL-2021ZM-199).

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Abstract Theme:
Other

Abstract Title:
Beyond Diagnostic Monism: Concurrent FHL1-Related Myopathy and CMT1A Unveiled by Persistent Neuropathic Feature

Background:
Inherited neuromuscular disorders can present with overlapping features, making diagnosis challenging. A single diagnosis may not fully account for all clinical manifestations, particularly in complex presentations. This case illustrates the importance of comprehensive phenotyping and genetic testing in uncovering multiple co-existing genetic pathologies.

Methods:
A 29-year-old male with a 15-year history of progressive proximal muscle weakness and distal sensory loss underwent clinical evaluation, including neurological examination, imaging, laboratory testing, electrodiagnostic studies, muscle biopsy, and extensive genetic testing. Family history and maternal symptoms were also assessed.

Results:
Initial findings revealed pes cavus, distal sensory deficits, scoliosis, and elevated creatine kinase levels. MRI showed fatty muscle infiltration. Electromyography demonstrated both myopathic and neuropathic features. Muscle biopsy was consistent with myofibrillar myopathy. Genetic analysis identified an X-linked deletion of exons 5–6 in the FHL1 gene, producing a truncated protein. Persistent neuropathic signs prompted further investigation, leading to the discovery of a 1.45-Mb PMP22 triplication on chromosome 17p12, confirming co-existing Charcot-Marie-Tooth disease type 1A (CMT1A). The PMP22 triplication was also present in the patient's mildly affected mother.

Conclusions:
This case represents a rare but clinically significant example of dual neuromuscular diagnoses: FHL1-related myopathy and CMT1A. The patient's complex phenotype could not be explained by a single genetic condition. This report highlights the diagnostic value of integrating detailed clinical assessment with comprehensive genetic testing to identify multiple pathogenic variants. Clinicians should maintain a high index of suspicion for dual diagnoses in

atypical neuromuscular presentations to guide accurate diagnosis, prognosis, and genetic counseling.
Patients were obtained according to the Declaration of Helsinki and that it has been approved by the ethics committee of Qilu Hospital of Shandong University (KYLL-202204-042-2).

EP64

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Abstract Theme:
Muscular Dystrophy

Abstract Title:
Facioscapulohumeral muscular dystrophy type 2 in Chinese Cohort: Findings from a Large-Scale 4qA D4Z4 Methylation Screening

Background:
Facioscapulohumeral muscular dystrophy (FSHD) is one of the most common autosomal dominant muscular dystrophies in adults. Most cases are attributed to D4Z4 repeat contraction (1–10 repeat units) at the 4q35 region (FSHD1), a minority of patients with >10 repeat units harbor mutations in epigenetic modifier genes, such as SMCHD1, defining FSHD2. Large-scale data on FSHD2 in the Chinese population are currently lacking. This study aimed to identify potential FSHD2 patients, using a combined screening approach, including 4qA DNA methylation analysis and next-generation genetic sequencing.
Methods:
A total of 237 clinically suspected FSHD-like phenotype patients were enrolled from the China Pan-Yangtze River Delta Neuromuscular Alliance. D4Z4 DNA methylation levels were assessed, and individuals with low methylation and non-contracted D4Z4 alleles were further analyzed for SMCHD1 mutations.
Results:
Five patients (2.1%) were identified as suspected FSHD2. Two male patients carried previously reported pathogenic variants: P1 (male, age 40) harbored a frameshift variant c.3274_3276+1del with decreased D4Z4 DR1 methylation (15.6%); P2 (male, age 22) carried a nonsense variant c.2656C>T (p.R886*) and methylation level of 12.5%. The remaining three cases carried novel likely pathogenic missense variants: P3 (female, age 16) was a de novo variant (c.715G>A, p.G239S) with segregation of hypomethylation (19.35%); P4 (female, age 37) carried c.3350C>T (p.S1117F), methylation 22.59%; P5 (female, age 22) carried c.437C>A (p.A146E), and both her mother and brother also carried the same variant and showed reduced methylation level (12.9%). Totally, the average methylation level of these five patients was 16.56%, below the suggested FSHD2 diagnostic threshold of 25%. The three novel variants are located within the Histidine kinase-like ATPase domain of SMCHD1, an ATP-binding region that are frequently associated with another SMCHD1 variants-related disease, Bosma arhinia microphthalmia syndrome (BAMS).
Conclusion:
The prevalence of FSHD2 in the Chinese population appears lower than in European or Indian cohorts (2% vs. 3–5%), potentially due to under-testing of patients with >10 D4Z4 repeats. Incorporating D4Z4 methylation as a initial screening tool enables better identification of FSHD2 candidates. Future studies with larger sample sizes are needed to further define the methylation and mutation spectrum of FSHD2 in China.

The institutional review board of the Huashan Hospital approved the study (KY2025-025) and all participants provided written informed consent.

EP65

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Abstract Theme:
Other

Abstract Title:
Taurine Deficiency and Mito-nuclear Transcriptional Decoupling in mt-tRNA Mutation Associated Mitochondrial Diseases

Background:
Mitochondrial diseases caused by mitochondrial tRNA (mt-tRNA) mutations impair oxidative phosphorylation (OXPHOS) and disrupt cellular energy metabolism. Effective treatment remains elusive due to an incomplete knowledge of the pathophysiological mechanisms underlying these genetic defects.
Methods:
We integrated dual-omics profiling (RNA-seq of muscle biopsies and targeted serum metabolomics) in 19 patients carrying m.3243A>G or m.8344A>G mutations. Functional validation was performed using patient-derived fibroblasts treated with exogenous taurine (0–10 mM). Assessments included mitochondrial respiration (Seahorse), ROS production (MitoSOX), membrane potential (JC-1), mtDNA copy number (qPCR), and OXPHOS protein expression (Western blot).
Results:
Transcriptomic data revealed upregulation of mitochondrial-encoded respiratory chain genes and a concurrent downregulation of nuclear-encoded subunits, indicating mito-nuclear transcriptional decoupling. Metabolomics identified a 26% reduction in serum taurine levels, accompanied by a compensatory upregulation of genes involved in taurine biosynthesis and transport, including FMO1 and SLC6A6. The observed compensatory activation of taurine synthesis and transport pathways reflects an adaptive cellular response to mitochondrial stress. Notably, exogenous taurine supplementation significantly enhanced mitochondrial respiration, membrane potential, and mtDNA content, while reducing reactive oxygen species in mt-tRNA mutate cells.
Conclusions:
These Results suggest that systemic taurine deficiency exacerbates mitochondrial dysfunction in mt-tRNA disorders and that taurine supplementation may represent a promising therapeutic strategy, warranting further clinical evaluation.
Not Applicable

EP66

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Abstract Theme:
Clinical
Motor Neuron Disease/ALS

Abstract Title:

Expanding the Genetic and Clinical Landscape of Multisystem Proteinopathy: A single-center retrospective study
Objective:
Multisystem proteinopathy (MSP) is a pleiotropic group of disorders which might initially presented inclusion body myopathy (IBM), amyotrophic lateral sclerosis (ALS), frontotemporal dementia (FTD), and Paget disease of bone (PDB). The genotype-phenotype correlation and clinical variability remain incompletely understood.
Methods:
We retrospectively reviewed 953 patients diagnosed with ALS, IBM, or dementia at Huashan Hospital from 2000 to 2024 who underwent genetic testing. Clinical, pathological, imaging, and genetic data were collected and analyzed.
Results:
A total of 29 patients (3.0%) carried MSP-related gene variants. The majority were male (72.4%) with onset in the third to fifth decade. 21/29 (72.4%) had a single phenotype, while 8 (27.6%) exhibited multisystem involvement. ALS/motor neuron disease was the most common phenotype (20/29), followed by IBM (10/29), FTD (7/29), and PDB (1/29). The most frequent variants were in ANXA11 (n=10) and VCP (n=6), followed by OPTN, SQSTM1, MATR3, and HNRNPA1. Notably, five of the ANXA11 variants were located near the N-terminal low-complexity domain. FTD was

observed in cases with variants in ANXA11, VCP, and OPTN, mostly with upper motor neuron features. Patients with ALS typically showed faster progression and initial upper limb involvement, while IBM cases more often began with lower limb weakness, even among carriers of the same variants.

Conclusion:
Our study broadens the clinical and genetic landscape of MSP and emphasizes its phenotypic variability. These findings highlight the diagnostic value of genetic testing in neuromuscular and cognitive disorders of uncertain cause.

Key words: Multisystem proteinopathy, amyotrophic lateral sclerosis, inclusion body myopathy;

The institutional review board of the Huashan Hospital approved the study (KY2024-1312) and all participants provided written informed consent.

EP67

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Abstract Theme:
Acquired Neuropathy

Abstract Title:
Clinical and Laboratory Features of Juvenile-onset Anti-NF155 Autoimmune Nodopathy in a Chinese Cohort

Background:
Neurofascin 155 autoimmune nodopathy (NF155 AN) is a recently recognized immune-mediated neuropathy distinct from chronic inflammatory demyelinating polyneuropathy (CIDP). While adult-onset cases have been increasingly reported, the juvenile-onset form remains poorly characterized.

Methods:
We conducted a retrospective analysis of 16 juvenile-onset NF155 AN patients from a national Chinese cohort, comparing their clinical, electrophysiological, and radiological features with those of adult-onset cases.

Results:
Juvenile-onset patients commonly presented with bilateral lower limb weakness, often accompanied by tremor and ataxia. Compared to adult cases, they exhibited a more pronounced motor-dominant onset phenotype (75% vs. 25%, $p = 0.0005$), more frequent tremor (93.75% vs. 60%, $p = 0.026$), and less cranial nerve involvement patients (55% vs. 18.75%, $p = 0.0407$). Electrophysiological, absent compound muscle action potentials (CMAPs) in peroneal and tibial nerves were more common in the juvenile group, alongside significant spinal roots/plexus hypertrophy on imaging. IVIg response was generally poor, but delayed rituximab initiation - even after several years - still led to clinical improvement.

Conclusion:
Juvenile-onset NF155 AN is a distinct clinical subtype marked by a severe motor-predominant onset accompanied by tremor and characteristic electrophysiological findings, yet retains a favorable prognosis with appropriate B-cell targeted therapy. Early recognition and timely diagnosis are essential to optimize treatment outcomes in this under-recognized population.

Xuanwu Hospital Medical Ethical Committee (Ethical number: 2023-235-003)

EP68

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Abstract Theme:
Congenital Myopathy

Abstract Title:

Scapula-humeral-peroneal myopathy caused by a novel ACTA1 variant

OBJECTIVE:
To describe the clinical phenotype and muscle pathology associated with a novel ACTA1 mutation linked to actinopathy.
METHODS:
Case report.
RESULTS:
A 16-year-old girl presented with progressive muscle weakness and toe-walking over a 9-year period. She reported early difficulties with activities such as jogging, jumping, hand flips, keeping pace with peers while walking, squatting, and climbing stairs. Her developmental milestones were otherwise normal. She had undergone two Achilles tendon lengthening (ATL) surgeries at ages 9 and 12 for toe-walking. Neurological examination revealed mild to moderate muscle weakness in a scapulohumeral, peroneal, and distal distribution, with mild facial involvement. Additional findings included bilateral Achilles tendon contractures, diminished or absent deep tendon reflexes, postural hand tremor, and joint hypermobility. No respiratory impairment was observed. Whole exome sequencing (WES) identified a heterozygous ACTA1 p.S352P variant, which has not been previously reported. Parental testing confirmed the variant was de novo. Muscle biopsy from the biceps demonstrated marked fiber size variability, including atrophic, hypertrophic, splitting, and whorled fibers, with sparse necrosis, and perimysial/endomysial fibrosis. No nemaline rods or actin aggregates were observed.
CONCLUSIONS:
This case represents the first report of an ACTA1 mutation-associated scapulohumeral-peroneal myopathy outside the originally described American family. The p.S352P variant affects a highly conserved, surface-exposed residue likely involved in intermolecular electrostatic interactions, as suggested by structural simulation. Unlike classic ACTA1 mutations that lead to nemaline rod formation, this variant does not appear to induce rod formation or actin aggregation, similar to previously described Glu197 mutations, implying a distinct pathogenic mechanism. This report broadens the phenotypic and genotypic spectrum of ACTA1-related myopathies.

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Abstract Theme:
Metabolic myopathy

Abstract Title:
Queuine Ameliorates Impaired Mitochondrial Function Caused by mt-tRNAAsn Variants

Background:
Mitochondrial tRNA (mt-tRNA) variants have been found to cause disease. Post-transcriptional queuosine (Q) modifications of mt-tRNA can promote efficient mitochondrial mRNA translation. Q modifications of mt-tRNAAsn have recently been identified. Here, the therapeutic effectiveness of queuine was investigated in cells from patients with mt-tRNAAsn variants.
Methods:
Six patients (from four families) carrying mt-tRNAAsn variants were included in the study. Queuine levels were quantified by mass spectrometry. Clinical, genetic, histochemical, biochemical, and molecular analysis was performed on muscle tissues and lymphoblastoid cell lines (LCLs) from patients to investigate the pathogenicity of the novel m.5708C>T variant. The use of queuine in mitigating mitochondrial dysfunction resulting from the mt-tRNAAsn variants was evaluated.
Results:
The variants included the m.5701delA, m.5708C>T, m.5709C>T, and m.5698G>A variants in mt-tRNAAsn. The pathogenicity of the novel m.5708C>T variant was confirmed, as demonstrated by a decreased steady-state level of mt-tRNAAsn, mtDNA-encoded protein levels, oxygen consumption rate (OCR), and the respiratory complex activity. Notably, the serum queuine level was significantly reduced in these

patients and in vitro queuine supplementation was found to restore the reductions in mitochondrial protein activities, mitochondrial membrane potential, OCR, and increases in reactive oxygen species.
Conclusions:
The study not only confirmed the pathogenicity of the m.5708C>T variant but also explored the therapeutic potential of queuine in individuals with mt-tRNAAsn variants. The recognition of the novel m.5708C>T variant's pathogenic nature contributes to our comprehension of mitochondrial disorders. Furthermore, the Results emphasize queuine supplementation as a promising approach to enhance the stability of mt-tRNAAsn and rescue mitochondrial dysfunction caused by mt-tRNAAsn variants, indicating potential implications for the development of targeted therapies for patients with mt-tRNAAsn variants.
Research Ethics Board of Qilu Hospital, under registration number KYLL-2021(KS)-079, from 2022 to 2025

EP70

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Abstract Theme:
Metabolic myopathy

Abstract Title:
Targeting DRP1 with Mdivi-1 to correct mitochondrial abnormalities in ADOA+ syndrome

Background:
Autosomal dominant optic atrophy plus (ADOA+) is characterized by primary optic nerve atrophy accompanied by a spectrum of degenerative neurological symptoms. Despite ongoing research, no effective treatments are currently available for this condition. Our study provided evidence for the pathogenicity of an unreported c.1780T>C variant in the OPA1 gene through patient-derived skin fibroblasts and an engineered HEK293T cell line with OPA1 downregulation. We demonstrate that OPA1 insufficiency promoted mitochondrial fragmentation and increased DRP1 expression, disrupting mitochondrial dynamics. Consequently, this disruption enhanced mitophagy and caused mitochondrial dysfunction, contributing to the ADOA+ phenotype. Notably, the Drp1 inhibitor, mitochondrial division inhibitor-1 (Mdivi-1), effectively mitigated the adverse effects of OPA1 impairment. These effects included reduced Drp1 phosphorylation, decreased mitochondrial fragmentation, and balanced mitophagy. Thus, we propose that intervening in DRP1 with Mdivi-1 could correct mitochondrial abnormalities, offering a promising therapeutic approach for managing ADOA+.
Ethical approval:
Research Ethics Board of Qilu Hospital, under registration number KYLL-2021(KS)-079, from 2022 to 2025

EP71

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Abstract Theme:
Muscular Dystrophy

Abstract Title:
Clinical and myopathological studies of sarcoglycanopathies

Objective:
Sarcoglycanopathies are autosomal recessive limb-girdle muscular dystrophy R3-R6 (LGMDR3-R6) caused by pathogenic variants in the SGCA, SGCB, SGCG, and SGCD genes. In China, the clinical and genetic spectrums, muscle magnetic resonance imaging (MRI) characteristics and skeletal muscle pathology of affected patients remain to be elucidated.
Methods:

A total of 81 patients diagnosed with LGMDR3-R6 from March 2008 to December 2024 at Peking University First Hospital, were retrospectively included to analyze their clinical phenotypes and genotype characteristics. Fifty-two patients underwent MRI of the lower limb muscles, and 59 patients underwent muscle biopsy.

Results:

The cohort included 49 SGCA, 14 SGCB, 17 SGCG, and 1 SGCD patients, with a total of 78 pathogenic variants identifie. Symptomatic patients accounted for 64 (82.1%), with an average onset age of 6.4 ± 4.1 year. The most common initial symptom was proximal lower limb weakness (61.5%). Accompanying symptom included calf hypertrophy (60.3%), scapular winging (39.3%), muscle pain (36.7%), and Achilles tendon contracture (27.9%). The average fat content in the thigh muscles was slightly higher than that in the pelvis (P = 0.0001) and calf muscles (P = 0.0064) on MRI. Lower limb fat infiltration was significantly positively correlated with muscle strength, age, disease duration, and disease severity. MRI edema showed mild to moderate involvement, and was significantly positively correlated with creatine kinase. Muscle biopsy revealed that 75% of cases showed dystrophic changes. Inflammatory alterations included MHC-I positivity (98.0%), C5b-9 deposition (59.2%), CD68+ macrophages (84.8%) infiltration. The total pathological inflammation and fibrofatty infiltration scores were significantly positively correlated with the MRI edema and fatty scores, respectively ($\rho = 0.3376$, $P = 0.0332$; $\rho = 0.6169$, $P < 0.0001$).

Conclusion:

This study represents the largest clinical, imaging and pathological summary of sarcoglycanopathies in China to date. There is a good correlation between clinical, pathological and imaging changes. The study further confirms the presence of chronic inflammatory changes in skeletal muscle in these disorders.

All authors declare no conflicts of interest.

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Abstract Theme:
Myasthenia Gravis

Abstract Title:
Dynamic Changes in Peripheral Immune Cells During Efgartigimod Treatment in Naive Generalized Myasthenia Gravis

Background:

Efgartigimod, an FcRn antagonist, has effectively reduced pathogenic IgG and improved clinical symptoms in generalized myasthenia gravis (gMG). However, its immunomodulatory effects beyond IgG depletion are rarely reported. This study aimed to investigate clinical and immunological responses during the initial treatment cycle of efgartigimod in naive acetylcholine receptor antibody-positive (AChR-Ab+) gMG patients, with a focus on peripheral innate and adaptive immune cell dynamics.

Methods:

From Oct 23, 2023, to Dec 10, 2024, a longitudinal study was conducted in the Xuanwu Hospital MG cohort. Seventeen treatment-naive AChR-Ab+ gMG patients meeting strict criteria received a four-dose efgartigimod regimen. Clinical efficacy was assessed using MG-ADL and QMG scores. Serum total IgG and AChR-Ab levels were measured. Peripheral immune profiling included leukocytes, neutrophils, monocytes, platelets, NK cells, and T/B-cell subsets. Longitudinal changes were analyzed via linear mixed-effects models.

Results:

All patients achieved clinical improvement, accompanied by significant reductions in serum total IgG and AChR antibody levels. Neutrophil and leukocyte counts progressively increased, peaking at week 3 ($P<0.05$), whereas monocyte and platelet counts remained relatively stable throughout all visits. CD4+ and CD8+ T cells

declined transiently at week 2 and partially recovered by week 3 (P=0.091 and P=0.005); the CD4/CD8 ratio remained stable. NK cells showed a transient decrease at week 2 with a borderline significant time effect (P=0.050), followed by partial recovery. Plasmablast proportions significantly increased at week 2 (P<0.05), with a parallel trend in memory B cells. A transient increase in regulatory T cells was observed at week 1 (P<0.05). In the sensitivity analysis, immune cell trends were similar to those observed in the primary analysis. These immune dynamics occurred independently of corticosteroid use, suggesting selective immunomodulatory effects of FcRn antagonism.
Conclusion:
This study provides the first longitudinal evidence of dynamic innate and adaptive immune changes during efgartigimod therapy in naive gMG patients.Beyond IgG clearance, efgartigimod might exert targeted immunoregulatory effects on neutrophils and lymphocyte subsets. These findings highlight the broader immunological impact of FcRn blockade and support the need for further mechanistic and longitudinal studies.
This study was approved by the Ethics Committee of Xuanwu Hospital, Capital Medical University ([2017]084).

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Abstract Theme:
Other

Abstract Title:
Clinical, pathological and genetic features as well as follow-up of 68 patients with late-onset Pompe disease: A single-center retrospective study

Pompe disease is a muscular lysosomal storage disorder characterized by autosomal recessive inheritance and caused by deficiency of the acid alpha-glucosidase (GAA) enzyme. Late-onset Pompe disease (LOPD) exhibits heterogeneous clinical presentations, which are influenced by the type of GAA mutation and residual enzyme activity. In this study, we conducted a retrospective analysis of 68 Chinese LOPD patients over a six-year period at a single center to delineate the real-world disease status and survival outcomes. The predominant clinical manifestation in this cohort was symmetrical weakness in the proximal lower limbs, with respiratory failure being a common initial symptom. Among the 47 patients who received enzyme replacement therapy (ERT), the mortality rate was 6.4%, significantly lower than the 57.1% observed in the 21 patients who did not receive ERT. Muscle pathology in LOPD patients revealed notable features including fiber size variability, the presence of small basophilic particles within muscle fibers, rimmed vacuoles (RVs), cytoplasmic bodies as seen on modified Gomori trichrome (MGT) staining, glycogen accumulation demonstrated by periodic acid-Schiff (PAS) staining, type II fiber atrophy, vacuolation in type II fibers, and strong positive acid phosphatase (ACP) staining. The severity of muscle pathology correlated with lower body mass index (BMI) and spinal curvature abnormalities. The most frequent GAA gene mutation identified was c.2238G>C (p.W746C), present in 43.3% of patients. Patients who initiated ERT shortly after diagnosis exhibited significantly greater improvements in muscle strength and six-minute walk test (6WT)
Results compared to those who started treatment later. In summary, our data indicate that ERT confers a survival advantage, and earlier initiation of ERT correlates with better improvement in muscle strength and daily activity performance in LOPD. Additionally, lower BMI, shorter 6MWT and spinal curvature abnormalities were associated with more severe muscle pathology.
Not Applicable

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Abstract Theme:
Other

Abstract Title:
Whole-body muscle imaging in ADSS1 myopathy: Progressive lower limb involvement with preserved trunk musculature

BACKGROUND:
While previous studies have reported muscle involvement in the lower extremities of ADSS1 myopathy, a comprehensive whole-body analyses remain limited. In our earlier work focused on leg muscles, we observed involvement of both proximal and distal muscles in a Japanese patient cohort, challenging the notion of ADSS1 myopathy as a purely distal myopathy. The objective of this study aimed to delineate the spatial and temporal progression of muscle involvement throughout the body.
METHODS:
We evaluated fat infiltration in 43 muscles using modified Mercuri scores and assessed diaphragm thickness via CT and MRI in 57 patients with ADSS1 myopathy. Comparative analysis included patients with GNE myopathy (n=58), OPMD (n=32), FLNC myopathy (n=17), titinopathy (n=14), VCP myopathy (n=13), MYH7 myopathy (n=13), and DNAJB6 myopathy (n=13). Imaging data were analyzed using UMAP and PCA for dimensionality reduction, hierarchical clustering, and correlation with clinical parameters.
RESULTS:
UMAP and hierarchical clustering revealed three distinct imaging patterns within ADSS1 myopathy: distal-predominant, proximal-predominant, and generalized muscle weakness—regardless of clinical classification. These clusters may reflect a trajectory of fat replacement. Motor decline was associated with worsening involvement of thigh and leg muscles, but not with respiratory or cardiac dysfunction. However, decreased %VC was strongly associated with reduced diaphragm thickness ($p < 0.0001$), supporting its potential as a predictive marker. Notably, trunk muscles were relatively spared, even in advanced stages.
CONCLUSIONS:
This study presents the first whole-body imaging-based characterization of ADSS1 myopathy, revealing a pattern of progressive lower limb involvement with preservation of trunk musculature.

Approving institution: NCNP, Number: A2022-045, Date: 8/24/2022, Validity of approval: 3/31/2027

EP75

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Abstract Theme:
Myositis

Abstract Title:
Sporadic Inclusion Body Myositis with CD3+CD4-CD8- Double Negative T-cell Lymphoma ： a rare coincidence case

Background:
Sporadic inclusion body myositis (sIBM) is a progressive, refractory idiopathic inflammatory myopathy. Although its exact pathogenesis remains unclear,rare coincidence with chronic lymphocytic leukemia have been reported.
Methods:
We report a rare case of sIBM coexisting with CD3+CD4-CD8- Double Negative T-cell Lymphoma. Clinical, laboratory, and pathological data were collected, and the patient's treatment course and follow-up outcomes were documented.
Results:
A 35-year-old man presented with progressive upper limb weakness over 4 years, followed by proximal lower limb weakness, along with

impaired hand grip and dexterity. Physically examination showed muscle atrophy involving the ventral forearms, quadriceps and gluteus maximus. Manual muscle testing showed the following strength (left/right): wrist flexion 4+/5-, wrist extension 5-/5, finger flexion 3/4, hip flexion 4/4, knee extension 4/4. This pattern is consistent with the typical distribution of muscle involvement seen in sIBM. Serum creatine kinase was 393.90 U/L. Serum anti-cN1A autoantibody was positive. Muscle MRI indicates fat infiltration with mild edema in the bilateral forearm flexor digitorum profundus and quadriceps muscle. White blood cell count was 15.96 × 10^9/L with 79% lymphocytes. Flow cytometry of peripheral blood and bone marrow showed 71.35% and 69.62% $CD3^+CD4^-CD8^-$ T cells, respectively, with reduced TRBC1 expression. T-cell receptor gene analysis showed clonal rearrangements of both TRB and TRG chains, supporting a diagnosis of CD3+CD4-CD8- double negative T-cell lymphoma. Muscle biopsy revealed inflammatory myopathy with rimmed vacuoles, COX-negative muscle fibers, and mitochondrial abnormalities, consistent with sIBM. Immunohistochemical findings $CD3^+$ T-cell predominance, with weak CD4/CD8 expression, matched that of bone marrow. The patient was treated with prednisone and methotrexate, resulting in mild symptomatic improvement.

Conclusions:

This case highlights the potential role of clonal, neoplastic T-cell proliferation in the development sIBM, offering new insights into its underlying pathogenesis and potential treatment approaches.

Peking University First Hospital; No. 2019【181】;2019-8-20; 2025-8-20

EP76

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Abstract Theme:
Congenital Myopathy

Abstract Title:
Skeletal muscle imaging in tubular aggregate myopathy associated with the STIM1 and ORAI1 variants

Background:

The STIM1 and ORAI1 genes are causative for tubular aggregate myopathy (TAM), an autosomal dominant muscle disease characterized by a broad clinical spectrum and the presence of tubular aggregates on biopsy. Skeletal muscle imaging has increasingly shown strong correlations with motor function, highlighting its potential as a diagnostic and monitoring tool. This study aimed to characterize and compare skeletal muscle imaging findings in TAM patients with STIM1 or ORAI1 variants to identify genotype-specific and progressive patterns.

Methods:

Whole-body axial CT and/or T1-weighted MRI data were collected from nine genetically confirmed patients: four with STIM1 variants and five with ORAI1 variants. Fat infiltration in 44 muscles was graded using a standardized modified Mercuri score. Hierarchical clustering and principal component analysis (PCA) were performed to classify affected muscles and infer progression patterns of fatty replacement.

Results:

Muscles in the neck, shoulder girdle, upper trunk, and anterior compartment of the lower legs tended to be spared in both STIM1- and ORAI1-associated TAM. In contrast, gluteal muscles were frequently affected from early disease stages. Progressive fatty infiltration was observed in the lumbar paraspinal, rectus abdominis, thigh, and posterior lower leg muscles. Notably, patients with STIM1 variants showed predominant involvement of lateral muscles, whereas those with ORAI1 variants exhibited more pronounced involvement of the proximal trunk and thigh muscles. While the overall distribution of muscle involvement overlapped between the two groups, distinct patterns were observed, and the progression of muscle involvement correlated with specific gene variants, suggesting genotype–phenotype correlations.

Conclusions:

This study identified both shared and distinct skeletal muscle imaging features in TAM associated with STIM1 and ORAI1 variants. Early involvement of specific muscles may aid in differential diagnosis, while late-stage patterns could serve as useful markers for disease monitoring and potential endpoints in future clinical trials.

Medical Ethics Committee of the NCNP (B2024-130）

EP77

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Abstract Theme:
Other

Abstract Title:
Epidemiological Landscape of Genetic Neuromuscular Disorders in Japan: A Population-Based Study Using the National Database

Background:
Genetic neuromuscular disorders (NMDs) are rare and often underrepresented in national statistics due to fragmented clinical data. In Japan, the National Database (NDB) managed by the Ministry of Health, Labour and Welfare offers a valuable resource for estimating the number of affected individuals on a population level. This study aimed to describe the nationwide prevalence of genetic NMDs using the NDB.
Methods:
We conducted a retrospective analysis of data from the NDB between 2012 and 2021. A total of 54 genetic NMDs were included, classified into four categories: metabolic myopathies, muscular dystrophies, motor neuron diseases, and congenital myopathies. Diagnoses were extracted using ICD-10 codes. Two definitions were applied to identify relevant cases: one limited to primary disease coding and another inclusive of secondary coding. Data masking was applied for patient counts under 10 to protect privacy.
Results:
We report the patient counts for representative NMDs in fiscal year 2021, including dystrophinopathies, facioscapulohumeral muscular dystrophy (FSHD), myotonic dystrophy (DM), spinal muscular atrophy (SMA), Fukuyama congenital muscular dystrophy (FCMD), Pompe disease, and X-linked myotubular myopathy (XLMTM). Among these, DM was the most prevalent, followed by dystrophinopaties, FSHD, and SMA, FCMD, Pompe disease, and XLMTM. Age-stratified analysis revealed distributions consistent with known disease progression and diagnosis patterns, and in some cases reflected the availability of genetic testing or treatment coverage. These findings provide a comprehensive view of the epidemiological landscape of genetic NMDs in Japan.
Conclusion:
To our knowledge, this is the first nationwide study to quantify the number of individuals with genetic neuromuscular disorders in Japan using the NDB. The **Results** highlight the significant patient population affected by these rare diseases and underscore the importance of continued surveillance and data-driven policy development. These insights may also inform clinical trial planning, therapeutic strategies, and future research on disease progression and care delivery.

Ethical approval was obtained from the Ethics Committee of the National Center of Neurology and Psychiatry (Approval No. A2020-126, approved on February 24, 2021; valid until March 31, 2026).

EP78

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Abstract Theme:
Metabolic myopathy

Abstract Title:
Lipid Storage Myopathy Associated with Sertraline in a Japanese Cohort

Lipid Storage Myopathy Associated with Sertraline in a Japanese Cohort

Background and Objective:
Recent reports have suggested that sertraline, a widely prescribed selective serotonin reuptake inhibitor (SSRI), may be implicated in the development of lipid storage myopathy (LSM), a rare muscle disorder that has traditionally been considered hereditary. We aimed to characterize the clinical and pathological features of Japanese patients with biopsy-confirmed LSM who were receiving sertraline.

Methods:
We retrospectively reviewed muscle biopsy cases evaluated at National Center of Neurology and Psychiatry between January 2006 and June 2025. Adult patients (aged ≥18 years) were included if they showed prominent lipid droplet accumulation on Oil Red O staining on muscle biopsy, lacked a confirmed genetic diagnosis, and were receiving sertraline at the time of biopsy.

Results:
A total of 11 patients met the inclusion criteria, with a mean age of 47.3 ± 10.6 years; 6 were men and 5 were women. The mean body mass index was 27.2 ± 5.4. The mean interval from symptom onset to biopsy was 16.5 ± 15.2 months (median: 8 months). All presented with proximal-dominant muscle weakness and myalgia. Serum creatine kinase levels were highly variable, ranging from 94 to 19,024 U/L (mean: 2,976 ± 5,198 U/L). Thigh MRI was performed in 8 patients, 7 of whom showed high signal intensity in the posterior thigh muscles on fat-suppressed images, with relative sparing of the semitendinosus muscle. On muscle biopsy, reduced succinate dehydrogenase (SDH) activity was observed in all cases, and type 1 fiber predominance was seen in 5. Follow-up data were available in 4 patients, all of whom showed clinical improvement after interventions, including sertraline withdrawal (n=1), riboflavin supplementation (n=1), or corticosteroid therapy (n=2).

Conclusion:
This case series suggests a potential link between sertraline and LSM, characterized by distinctive clinical and pathological findings. Increased awareness of this entity may facilitate timely diagnosis and therapeutic decisions.
The Ethics Committee of the NCNP (approval number: A2022-045).

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Abstract Theme:
Muscular Dystrophy

Abstract Title:
Possible Founder Variant and Spectrum of Phenotypic Manifestations of Fukuyama Congenital Muscular Dystrophy in five unrelated families in Pakistan: A case series

Fukuyama congenital muscular dystrophy (FCMD) is a rare autosomal recessive dystroglycanopathy caused by pathogenic/likely pathogenic (P/LP) variants also known as mutations in the FKTN gene, typically presenting in early childhood with hypotonia, progressive muscle weakness, and variable central nervous system and cardiac involvement. This case series describes five male patients from consanguineous families in different regions of Pakistan, all presenting with features of a progressive muscular dystrophy. Genetic analysis confirmed a homozygous pathogenic missense variant in FKTN in all five patients, establishing the diagnosis of FCMD. This report adds to the limited literature on FCMD in South Asia and emphasizes the phenotypic variability of the disorder, particularly its cardiac manifestations. Early genetic diagnosis is vital for appropriate clinical management and genetic counseling in populations with high rates of consanguinity.
Not applicable

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Abstract Theme:
Myositis

Abstract Title:
A Rare Overlap of Polymyositis and Sjögren's Syndrome in a Young Pakistani Woman: Diagnostic and Therapeutic Challenges

Background: Polymyositis is one of the types of inflammatory myopathy, characterized by weakness and chronic inflammation of skeletal muscle. It commonly overlaps with other autoimmune diseases, but rarely with Sjögren's syndrome.
Methods: Informed consent was obtained from the patient. We confirm that no data in the submission reveals the patient's identity.
Case Presentation: A 30-year-old female presented with progressive worsening bilateral upper and lower limbs muscle weakness over 10 years, with severe myalgias, shortness of breath, dysphagia, watery diarrhea, and 20 kg weight loss. She became unable to rise from sitting and had difficulty climbing the stairs and lifting her arms without assistance. She developed secondary Sjögren's syndrome with complaints of xerophthalmia, xerostomia. Labs showed elevated creatine kinases (929 U/L) and a negative rheumatoid factor and ASO titers. Muscle biopsy confirmed polymyositis. She improved with corticosteroids and hydroxychloroquine, regaining her mobility. However, Methotrexate was added later in order for continued improvement.
Conclusion/Comment:
The case presents a rare overlap of polymyositis and secondary Sjögren's syndrome (sSS) in a young woman from an under-resourced region. A decade-long delay in diagnosis highlights the challenges faced in resource-limited settings in recognizing autoimmune neuromuscular disorders. Atypical presentations of chronic diarrhea suggest extraglandular involvement or autonomic dysfunction while dysphagia and dyspnea can indicate Interstitial Lung Disease (ILD), requiring further evaluation with HRCT and PFTs. The detection of ILD could significantly alter the course of treatment. Moreover, the absence of sicca symptoms and autoimmune serologies complicated early diagnosis and subclassification, representing an ongoing diagnostic gap. The importance of timely immunosuppressive therapy is evident in the clinical improvement that follows the initiation of corticosteroid therapy. This case highlights the importance of better diagnostic access and the need for accessibility to essential tests and therapies in Pakistan, where delayed recognition contributes to prolonged disease burden in potentially functional and young patients.

Not applicable

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