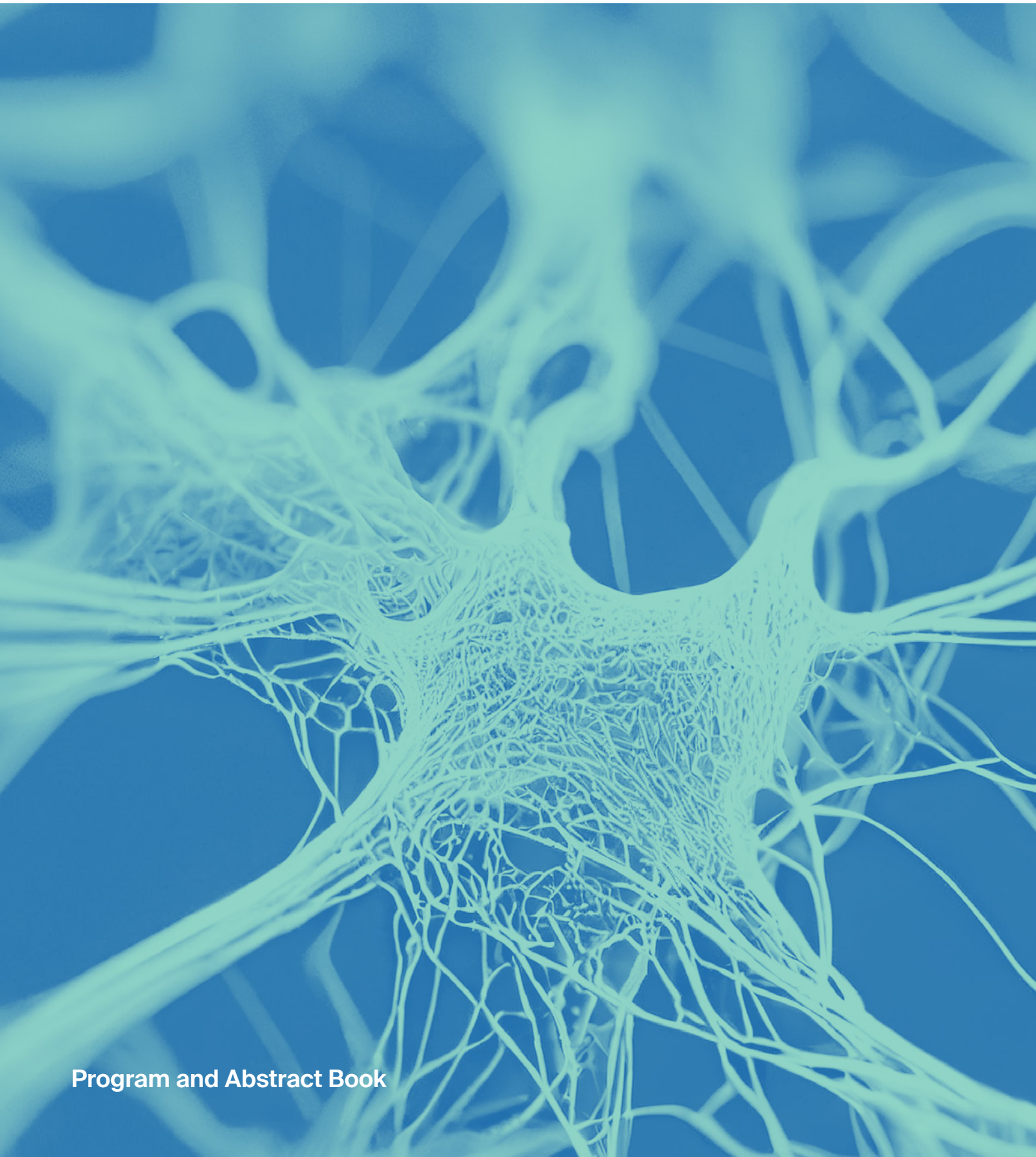
IECMD 2025 Conference

The 2nd International Electronic Conference on Medicine

11–13 November 2025 | Online



Program and Abstract Book

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The 2nd International Electronic Conference on Medicine

11–13 November 2025 | Online

MDPI

Organizing Committee

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Dr. Allison B. Reiss

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Dr. Daniel Romaus-Sanjurjo
Dr. Falup Pecurariu Cristian Gavril
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Welcome from the Chair

Dear Colleagues,

We are pleased to announce **the 2nd International Electronic Conference on Medicine - Exploring Cutting Edge Discoveries in Neurology** (IECMD2025), which will take place online from **11 to 13 November 2025**.

Conference Overview: This conference will present the latest studies in several fields of Neurology. The aim of this conference is to show the current state, challenges, opportunities, and future trends, and to allow the exchange of ideas and discussion of controversies and new possibilities for building collaboration among participants.

Key Themes: All clinical medicine-related scientists, researchers, and individuals are welcome to attend this event and share their findings pertaining, but not limited, to the following general and related themes:

- Neurodegeneration and Neuroinflammation Across the Motor and Spinal Axis (Multiple Sclerosis, ALS, HD and Spinal Cord Injury);
- Dementia Spectrum Disorders: From Frontotemporal Degeneration to Parkinson's and Alzheimer's Disease;
- Stroke and Brain Injury;
- Sleep Disorders;
- Chronic Pain and Headaches.

Conference Format: All submitted abstracts will be reviewed by the conference committee. Following the conference, authors are welcome to submit a proceedings paper, where the publication fee will be waived. Selected contributions will be invited for submission to the journal *Medicina* (ISSN: 1648-9144; Impact Factor: 2.4), which ranks Q1 (78/332 in the Medicine, General & Internal category), CiteScore in 2024 (4.1), with a 20% discount on the publication fee.

We look forward to you joining us at this exciting event.

Dr. Alberto Ouro
Conference Chair
NeuroAging Group (NEURAL), Clinical Neurosciences Research Laboratory (LINC), Health Research Institute of Santiago de Compostela (IDIS), Spain, Clinical University Hospital (CHUS), SERGAS, Santiago de Compostela, Spain

Dr. Allison B. Reiss
Conference Chair
New York University Long Island School of Medicine, Mineola, New York, NY, USA

medicina

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The journal's main focus is on reviews as well as clinical and experimental investigations. The journal aims to advance knowledge related to problems in medicine in developing countries as well as developed economies, to disseminate research on global health, and to promote and foster prevention and treatment of diseases worldwide. *Medicina* publications cater to clinicians, diagnosticians and researchers, and serve as a forum to discuss the current status of health-related matters and their impact on a global and local scale.

Journal Webpage: https://www.mdpi.com/journal/medicina

Session Chairs

Dr. Anastasia Bougea

1st Department of Neurology, "Aiginition" Hospital, National and Kapodistrian University of Athens, School of Medicine, Athens, Greece

Dr. Hyunjoong Kim

Department of Senior Exercise Prescription, Gwangju Health University, Gwangju, Republic of Korea

Prof. Dr. Simona Dragan

University Clinic of Internal Medicine and Ambulatory Care, Prevention and Cardiovascular Recovery, Department VI—Cardiology, “Victor Babes” University of Medicine and Pharmacy, Timisoara, Romania

Dr. Daniel Romaus-Sanjurjo

Marie Skłodowska-Curie Actions (MSCA) Fellow, NeuroAging Group (NEURAL), Health Research Institute of Santiago de Compostela (IDIS), Santiago de Compostela, Spain

Dr. Cristian Falup Pecurariu

Faculty of Medicine, Transilvania University Brasov, Romania

Keynote Speakers

Professor Aaron E. Katz

Professor, Department of Urology at NYU Grossman Long Island School of Medicine, USA, Medical Director, Continuing Medical Education (CME), NYU Grossman Long Island School of Medicine, USA, Chair, Department of Urology at NYU Grossman Long Island School of Medicine, USA

Prof. Dr. Simona Dragan

University Clinic of Internal Medicine and Ambulatory Care, Prevention and Cardiovascular Recovery, Department VI—Cardiology, „Victor Babes" University of Medicine and Pharmacy, Timisoara, Romania, Research Centre of Timisoara Institute of Cardiovascular Diseases, „Victor Babes" University of Medicine and Pharmacy, Timisoara, Romania

Dr. Ruben Cuesta-Barriuso

Department of Surgery and Medical Surgical Specialities, University of Oviedo, Spain

Professor Mark I. Johnson

Centre for Pain Research, School of Clinical and Applied Sciences, Leeds Beckett University, Leeds, United Kingdom

Dr. Cristian Falup Pecurariu

Faculty of Medicine, Transilvania University Brasov, Romania

Invited Speakers

Assoc. Prof. Giovanni Palermo

Center for Neurodegenerative diseases - Parkinson's disease and Movement disorders Unit of Neurology, Department of Clinical and Experimental Medicine, University of Pisa, Italy

Assoc. Prof. Georgia Xiromerisiou

School of Medicine, University of Thessaly, Volos, Greece

Dr. Kundnani Nilima Rajpal

Department of Cardiology, University of Medicine & Pharmacy "Victor Babes", Timisoara, Romania

Dr. Hugo J. Kim

Assistant Project Scientist at the University of California, San Diego, CA, USA

Dr. Amalia Cornea

Senior Lecturer, Department of Neurosciences, Neurology II Division, Victor Babeș University of Medicine and Pharmacy, Timișoara, Romania

Dr. Valentina Baldini

Department of Biomedical and Neuromotor Sciences, University of Bologna, Bologna, Italy

Professor Shira Knafo

Department of Physiology and Cell Biology Faculty of Health Sciences, Ben-Gurion University of the Negev, The National Institute for Biotechnology in the Negev, Beer-Sheva, Israel

Program Overview

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Contributed Oral Presentations
(9:00 CET| 03:00 EST| 16:00 CST)</td><td rowspan="2">Session 3. Stroke and Brain Injury

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IECMD 2025 Program

11 November 2025 (Tuesday)

Session 1. Neurodegeneration and Neuroinflammation Across the Motor and Spinal Axis (including Multiple Sclerosis, ALS, Huntington's Disease, and Spinal Cord Injury)

Time: 9:00 (CET, Basel) / 03:00 (EST, New York) / 16:00 (CST Asia, Beijing)

Time (CET)	Speaker	Title
09:00–09:10	*Welcome and Opening Remarks* *Dr. Alberto Ouro and Dr. Allison B. Reiss* *Event Chairs*	
09:10–09:20	*Welcome by Session Chair* *Dr. Daniel Romaus-Sanjurjo*	
09:20–09:35	**Prof. Shira Knafo** Invited Speaker	Alzheimer's Disease as Synaptic Failure
09:35–09:50	**Dr. Hugo J. Kim** Invited Speaker	Investigating the Molecular Mechanisms of Intrinsic and Extrinsic Factors in Axon Regeneration
09:50–10:05	**Mariña Rodríguez Arrizabalaga** Selected Speaker	Magnetic resonance imaging as a non-invasive method to assess pyramidotomy
10:05–10:20	**Daniela Malakovska** Selected Speaker	Proteasome 20S Subunit Beta Gene Polymorphisms Associate with Glatiramer Acetate Response in Latvian Multiple Sclerosis Patients
10:20–10:35	**Elina Leonova** Selected Speaker	VDR gene polymorphisms predict treatment response in Latvian multiple sclerosis cohort
10:35–10:50	**Laura Bampi** Selected Speaker	Clinical and Economic Impact of Hospitalizations for Multiple Sclerosis in Brazil: A Nationwide Study from 2015 to 2025
10:50–11:05	**Jekaterina Kolenda** Selected Speaker	Age- and Hypertension-Related Neurochemical Remodeling in the Jugular–Nodose Ganglion Complex of Rats: Asymmetry and Plasticity of CGRP, nNOS, and TTN3 Expression
11:05-11:20	**Donna de Levante Raphael** Selected Speaker	The Impact of Neuropsychiatric Symptoms in Early-Stage Alzheimer's Disease and Mild Cognitive Impairment
11:05–14:00	**Break**	**Break**

Session 2. Dementia Spectrum Disorders: From Frontotemporal Degeneration to Parkinson's and Alzheimer's Disease

Time: 14:00 (CET, Basel) / 08:00 (EST, New York) / 21:00 (CST Asia, Beijing)

Time (CET)	Speaker	Title
14:00–14:10	*Welcome by Session Chair* *Dr. Anastasia Bougea*	
14:10–14:30	**Prof. Aaron E. Katz** Keynote Speaker	Effects of Hormone-blocking Therapy on Neurocognition in Prostate Cancer
14:30–14:45	**Assoc. Prof. Giovanni Palermo** Invited Speaker	Dopaminergic imaging in PD
14:45–15:00	**Assoc. Prof. Georgia Xiromerisiou** Invited Speaker	New therapies that target neuroplasticity in Parkinson's disease
15:00–15:15	**Maria Fernanda Valentim De Paula** Selected Speaker	Hospital Morbidity due to Parkinson's Disease in Brazilian Regions between 2020 and 2024

12 November 2025 (Wednesday)

Session 5. Chronic Pain and Headaches

Time: 9:00 (CET, Basel) / 03:00 (EST, New York) / 16:00 (CST Asia, Beijing)

Time (CET)	Speaker	Title
09:00–09:10	*Welcome by Session Chair* *Dr. Hyunjoong Kim*	
09:10–09:30	**Prof. Mark I. Johnson** Keynote Speaker	Transcutaneous Electrical Nerve Stimulation to Alleviate Pain: What the Evidence Really Says
09:30–09:45	**Letícia de Paula e Souza** Selected Speaker	Epilepsy in the Brazilian Public Health System: Trends, Access to Care, and Costs (2015–2024)
09:45–10:00	**Inesa Stonkutė** Selected Speaker	Alternative Injectable Therapies for Trigeminal Neuralgia: A Systematic Review of Efficacy and Safety
10:00–10:20	**Dr. Ruben Cuesta-Barriuso** Keynote Speaker	Chronic pain and conditioned pain modulation in patients with congenital coagulopathies and degenerative arthropathy
10:20–10:35	**Jesús Ignacio Rivera Cano** Selected Speaker	Psychological Approaches to Intractable Chronic Pain: A Comprehensive Review of Clinical, Hospital, and Health Psychology Interventions
10:35–13:00	**Break**	**Break**

Flash Poster Session

Time: 13:00 (CET, Basel) / 07:00 (EST, New York) / 20:00 (CST Asia, Beijing)

Time (CET)	Speaker	Title
13:00–13:05	**Ioannis Pantelis Adamopoulos** Selected Poster Presenter	Multiple Sclerosis during COVID-19 and Occupational Hazards
13:05–13:10	**Samanta Plavina** Selected Poster Presenter	Intergenic HLA Variant rs9275596 Modulates Treatment Response in Latvian Multiple Sclerosis
13:10–13:15	**Radka Bartová** Selected Poster Presenter	Changes of Glycine-Aspartate Metabolism at Glutamatergic Synapses in Multiple Sclerosis: Evidence from Cerebrospinal Fluid
13:15–13:20	**Maria Crina Isac** Selected Poster Presenter	Neuroprotective Effects of 6-Paradol on Okadaic Acid-Induced Cognitive Impairment in Zebrafish
13:20–13:25	**Ana Pérez Vázquez** Selected Poster Presenter	Incorporation of adaptogens in functional products as a preventive strategy for neurodegenerative diseases
13:25–13:30	**Michele Antonelli** Selected Poster Presenter	The Effects of Therapeutic Cannabis and Cannabinoids in Parkinson's Disease: An Overview of Meta-Analyses
13:30–13:35	**Dimitra Sali** Selected Poster Presenter	The Use of Visual Rating Scales in the Discrimination Between Alzheimer's Disease and Depression
13:35–13:40	**Mayra Leindeker Maffini** Selected Poster Presenter	Trends in hospitalizations for Alzheimer's disease in the Brazilian unified health system, 2016–2025: age group analysis and evidence of early-onset cases
13:40–13:45	**Juan M. Esteve** Selected Poster Presenter	Glioblastoma histological region-dependent differential expression of ITGA1 and NID2 genes encoding adhesion proteins to extracellular matrix
13:45–13:50	**Axis Anxo Carreira-Casais** Selected Poster Presenter	From Sweeteners to Sleeplessness: The Hidden Effects of Sucralose and Saccharin on the Gut–Brain
13:50–13:55	**Andrea Gutiérrez-Suárez** Selected Poster Presenter	Integrating Sport-Based Exercise in Acquired Brain Injury Rehabilitation: A Biopsychosocial Perspective

13 November 2025 (Thursday)

Session 3. Stroke and Brain Injury

Time: 9:00 (CET, Basel) | 03:00 (EST, New York) | 16:00 (CST Asia, Beijing)

Time (CET)	Speaker	Title
09:00–09:10	*Welcome by Session Chair* *Prof. Dr. Simona Dragan*	
09:10–09:30	**Prof. Dr. Simona Dragan** Keynote Speaker	Treatment of carotid artery stenosis - endarterectomy versus stenting
09:30–09:45	**Dr. Kundnani Nilima Rajpal** Invited Speaker	Cardio-Embolic Brain Complications in Atrial Fibrillation patients
09:45–10:00	**Dr. Amalia Cornea** Invited Speaker	Integrating Clinical, Imaging, and Biochemical Predictors in Acute Ischemic Stroke Prognosis
10:00–10:15	**Gabriel Abraham Ben-Dor** Selected Speaker	Understanding and Managing Functional and Somatic Features in Persistent Post-Concussion Symptoms: A Clinical Framework and Observational Insights
10:15–10:30	**Andrea Gutiérrez-Suárez** Selected Speaker	Sport-Based Exercise in Pediatric Acquired Brain Injury
10:30–10:45	**Burak Taşci** Selected Speaker	A Hybrid Deep Ensemble Framework with CNN Transformer Feature Fusion for Stroke Detection from Neuroimaging Data
10:45–11:00	**Abdullah Al Lawati** Selected Speaker	Colloid Cysts: A 15-Year Retrospective Review of Clinical Presentation and Outcomes
11:00-11:15	**Gabriela Pereira Macelaro** Selected Speaker	Trends in Meningitis Lethality by Etiology in Brazil: A Temporal Analysis from 2015 to 2024

Session 4. Sleep Disorders

Time: 11:15 (CET, Basel) | 05:15 (EST, New York) | 18:15 (CST Asia, Beijing)

Time (CET)	Speaker	Title
11:15-11:25	*Welcome by Session Chair* *Dr. Cristian Falup Pecurariu*	
11:25-11:45	**Dr. Cristian Falup Pecurariu** Keynote Speaker	The bidirectional relationship between sleep and neurodegeneration
11:45-12:00	**Dr. Valentina Baldini** Invited Speaker	Sleep in Psychiatric Disorders
12:00-12:10	**Dr. Alberto Ouro and Dr. Allison B. Reiss** Event Chairs	**Closing Remarks**

Session 1. Neurodegeneration and Neuroinflammation Across the Motor and Spinal Axis (including Multiple Sclerosis, ALS, Huntington's Disease, and Spinal Cord Injury)

sciforum-137531: Proteasome 20S Subunit Beta Gene Polymorphisms Associate with Glatiramer Acetate Response in Latvian Multiple Sclerosis Patients

Daniela Malakovska [1,*], Ilva Trapina [1], Samanta Plavina [1], Jegors Paramonovs [1], Jolanta Kalniņa [2] and Natalia Paramonova [1]

[1] Genomics and Bioinformatics, The Department of Pharmaceutical Sciences, Faculty of Medicine and Life Sciences, the University of Latvia, Riga, Latvia
[2] Faculty of Medicine & Life Sciences, University of Latvia, Riga, Latvia; Latvian Maritime Medicine Center, Riga, Latvia

Background

The ubiquitin–proteasome system modulates immune signalling; under inflammatory stimuli, standard 20S proteasomes switch to immunoproteasomes incorporating PSMB8 (LMP7) and PSMB9 (LMP2). Proteasome dysfunction is implicated in multiple sclerosis (MS) and may influence the response to disease-modifying therapies (DMTs).

Aim

To test whether PSMB8 and PSMB9 single-nucleotide polymorphisms (SNPs) associate with two-year clinical outcomes in Latvian MS patients.

Methods

We analysed rs2071543, rs9357155 (PSMB8) and rs17587 (PSMB9) genotypes, previously generated by PCR-RFLP, in 230 patients (342 DMT courses) from a national MS registry. Therapy response was defined as the annual change in Expanded Disability Status Scale (EDSS) and the attainment of "no evidence of disease activity" (NEDA) over 24 months. Associations with glatiramer acetate (GA) and other DMTs were evaluated using χ^2 and logistic regression ($\alpha = 0.05$).

Results and Discussion

GA-treated patients carrying rare-allele genotypes CT+TT of PSMB8 rs2071543, common-allele homozygote CC of PSMB8 rs9357155, or common-allele homozygote GG of PSMB9 rs17587 exhibited significantly greater EDSS worsening during the first treatment year ($p \leq 0.037$). In year 2, the risk pattern shifted: carriers of rare alleles (AA+GA) of PSMB9 rs17587 showed poorer EDSS outcomes ($p = 0.028$) than GG homozygotes, suggesting time-dependent genotype effects. No significant associations were observed for other DMT classes, underscoring a GA-specific interaction. This data suggests that genetic variation in immunoproteasome genes may influence GA treatment response in a time-dependent manner, possibly due to shifting immune mechanisms over the course of therapy.

Conclusions

Polymorphisms in PSMB8 and PSMB9 modulate the clinical response to glatiramer acetate in Latvian MS patients and merit validation as pharmacogenetic markers for personalised DMT selection.

Funding: UL project 1.1.1.2/VIAA/4/20/718; ERDF 1.1.1.1/16/A/016; UL Foundation (MikroTik) 40021.

sciforum-137400: VDR gene polymorphisms predict treatment response in Latvian multiple sclerosis cohort

Elina Leonova *, Ilva Trapina, Samanta Plavina, Jegors Paramonovs, Daniela Malakovska, Jolanta Kalnina and Natalia Paramonova

Genomics and Bioinformatics, The Department of Pharmaceutical Sciences, Faculty of Medicine and Life Sciences, the University of Latvia, Riga, Latvia

Background

Vitamin D receptor (VDR) polymorphisms can modulate immune pathways and may influence the efficacy of disease-modifying therapies (DMTs) in multiple sclerosis (MS).

Aim

To determine whether four common VDR single-nucleotide polymorphisms (SNPs) affect two-year therapeutic outcomes in Latvian MS patients.

Methods

We genotyped rs2228570, rs1544410, rs7975232 and rs731236 by RFLP in 230 patients (342 DMT courses). Clinical response was defined as a change in the Expanded Disability Status Scale (EDSS) and the maintenance of "no evidence of disease activity" (NEDA) within two years after therapy initiation.

Results and Discussion

Homozygous CC (rs2228570) and TT (rs731236) and heterozygous GA (rs1544410) genotypes were linked to greater EDSS worsening under glatiramer acetate (p 0.05). The GA genotype of rs1544410 also predicted a higher EDSS in year 2 among interferon-treated patients (p 0.05). No significant genotype effect was observed for rs7975232.

These data indicate genotype-dependent variability in DMT response, suggesting that VDR polymorphisms modulate the clinical efficacy of glatiramer acetate and interferon in MS.

Conclusions

Variants rs2228570, rs731236 and rs1544410 of the VDR gene may serve as pharmacogenetic markers to guide personalised DMT selection in Latvian MS patients.

Funding: UL project 1.1.1.2/VIAA/4/20/718; ERDF 1.1.1.1/16/A/016; UL Foundation (MikroTik) 40021. (228 words)

sciforum-135551: Changes of Glycine-Aspartate Metabolism at Glutamatergic Synapses in Multiple Sclerosis: Evidence from Cerebrospinal Fluid

Radka Bartová [1,*], Monika Ďurfinová [1] and Darina Slezáková [2]

[1] Institute of Medical Chemistry, Biochemistry and Clinical Biochemistry, Faculty of Medicine, Comenius University, Sasinkova st. 2, 811 08 Bratislava, Slovakia
[2] 2nd Department of Neurology, Faculty of Medicine, Comenius University, Limbová 5, 833 05, Bratislava, Slovakia

Metabolic changes and rearrangements of inhibitory/excitatory neurotransmitters identified since the early stages of multiple sclerosis (MS) [1] are associated with axonal loss and synaptic dysfunction at advanced stages [2]. The aim of this study was to identify a combination of biomarkers that would help to monitor MS progression at more advanced stages [3].

CSF levels of some neurotransmitters (glutamate-Glu, aspartate-Asp, glycine-Gly, GABA) in combination with markers of lipid peroxidation (MDA, 8-iso-PGF2α), the total antioxidant capacity (TAS), and specific neuronal damage (NSE) were determined in patients with MS (n=85; of which 76 had RR-MS, 9 had SP-MS), non-neurological controls (CG; n=26) and other neurological diagnoses (ONDs; n=31). The RP-HPLC method was used for the determination of neurotransmitters [4] and MDA [5]; F2-isoprostanes and NSE were determined by ELISA; TAS was determined colorimetrically [6].

Significantly higher concentrations of Gly (1.60 µmol/l vs 0.96 µmol/l p=0.0104) and Asp (0.16 µmol/l vs 0.026 µmol/l p=0.0333) in the whole cohort of MS and RR-MS patients compared to the CG and ONDs were found. Glu levels were higher in the total MS and RR subtype than in the CG (0.089 µmol/l vs 0.038 µmol/l p=0.0689; p=0.0616). Asp levels were significantly increased in EDSS≤3 compared to EDSS>3. Furthermore, Gly negatively correlated with NSE in MS and RR-MS, and positively correlated with TAS in CG. Glu levels positively correlated with 8-iso-PGF2α in MS and RR-MS.

Our results show that CSF levels of some of the studied neurotransmitters have the potential to be used as biomarkers monitoring the course of a specific pathological process in MS - Asp as an indicator of oxidative stress-induced metabolic changes in glutamatergic synapses of demyelinating lesions; Gly has potential as a cytoprotectant and immunosuppressant in the processes of remyelination [7,8].

sciforum-150164: Clinical and Economic Impact of Hospitalizations for Multiple Sclerosis in Brazil: A Nationwide Study from 2015 to 2025

Laura Bampi *, Morghana Machado Rosa, Isabela Hartmann Rost, Karina Castilhos Bastos, Ana Laura Ferreira, Caroline Dal Sant Giordani, Eduarda Paiva Borsa, Elisa Hahn Casani, Gabriela Pereira Macelaro, Larissa Narumi Takeda, Manuela Morales Borges, Sofia De Oliveira Belardinelli, João Paulo Farezin Fortti and João Pedro De Mello Figueiredo

School of Medicine, Federal University of Health Sciences of Porto Alegre – Campus Porto Alegre, 90050-170 – Porto Alegre, Brazil

Introducion

Multiple Sclerosis (MS) is a chronic, inflammatory disease affecting the central nervous system. Although primarily managed in outpatient settings, MS may lead to costly hospitalizations. While hospital mortality associated with MS is uncommon in high-income countries, its impact within developing healthcare systems remains insufficiently studied. This study aims to describe the clinical and economic implications of MS-related hospitalizations in Brazil.

Methods

A descriptive ecological study was conducted using data from the Brazilian Unified Health System Hospital Information System (SIH/SUS). All hospital admissions registered under ICD-10 code G35 (MS) between July 2015 and July 2025 were included. The variables analyzed comprised the number of hospitalizations, in-hospital deaths, length of stay, associated costs, and regional distribution across the country.

Results

A total of 9,482 hospitalizations for Multiple Sclerosis were recorded, amounting to 92,415 hospital days. There were 245 in-hospital deaths, resulting in a mean case fatality rate of 2.6% (ranging from 1.7% to 3.2%). The average length of stay was 9.7 days. Cumulative hospital expenditures reached R$ 24.8 million (approximately USD 5 million), with an average cost of R$ 2,600 per admission—exceeding R$ 3,000 in certain years. Regionally, the Southeast accounted for 43% of all hospitalizations and the South for 25%, whereas the North and Northeast regions showed proportionally higher mortality rates (>3%).

Conclusions

From 2015 to 2025, MS led to nearly 10,000 hospital admissions in Brazil, with hospital mortality rates two to three times higher than those reported in high-income countries. The economic impact of almost R$ 25 million reinforces the significance of MS within the framework of a universal public healthcare system. Regional disparities emphasize the urgent need for public health policies to improve equitable access to specialized care and to reduce preventable hospitalizations.

sciforum-137196: Intergenic HLA Variant rs9275596 Modulates Treatment Response in Latvian Multiple Sclerosis

Samanta Plavina [1,*], Ilva Trapiņa [1], Jegors Paramonovs [1], Daniela Malakovska [1], Jolanta Kalniņa [2] and Natalia Paramonova [1]

[1] Faculty of Medicine and Life Sciences, University of Latvia, Riga, Latvia
[2] Multiple Sclerosis Center, Latvian Maritime Medicine Center, Riga, Latvia

Background

SNP rs9275596, situated between HLA-DQB1 and HLA-DQA2, is linked to MS risk in Latvians. Its effect on disease-modifying therapy (DMT) outcomes is unexplored.

Aim

Assess the impact of rs9275596 on two-year clinical response to DMTs.

Methods

Among 296 registry patients, 230 received 342 treatment courses. Annual change in Expanded Disability Status Scale (ΔEDSS) and "no evidence of disease activity" (NEDA) status were analysed by genotype ($\alpha = 0.05$).

Results and Discussion

In patients on less frequently used therapies (e.g., mitoxantrone, azathioprine), rare-allele homozygotes TT showed an average first-year ΔEDSS of −0.30 ± 0.75, which was significantly better than common homozygotes CC (0.20 ± 0.26; $p = 0.038$), suggesting a protective TT effect with these drugs. In contrast, patients carrying the TT genotype who were treated with glatiramer acetate (GA) had worse outcomes, showing an average EDSS increase of 0.41 ± 0.80 during the first year, which was significantly higher than those receiving other treatments ($p = 0.024$; $\eta = 0.36$). This indicates a genotype-specific adverse response to GA. No significant differences between genotypes were observed in the second year of therapy or in NEDA status, suggesting that the influence of rs9275596 is limited to early treatment response and may depend on the specific therapy used.

Conclusions

The HLA variant rs9275596 appears to influence short-term treatment response in Latvian MS patients. TT genotype carriers show better outcomes with less commonly used therapies but respond poorly to glatiramer acetate (GA), while CC carriers tend to benefit more from GA. These findings suggest that rs9275596 may serve as a pharmacogenetic marker to guide therapy selection, warranting further validation.

Funding: UL 1.1.1.2/VIAA/4/20/718; ERDF 1.1.1.1/16/A/016; UL Foundation (MikroTik) 40021.

sciforum-148420: Magnetic resonance imaging as a non-invasive method to assess pyramidotomy

Mariña Rodríguez-Arrizabalaga *, Mónica Castro-Mosquera, Manuel Debasa-Mouce, Eduardo López-Reguera, Marta Aramburu-Núñez, Alberto Ouro, Ramón Iglesias-Rey, Tomás Sobrino and Daniel Romaus-Sanjurjo

NeuroAging Group (NEURAL), Clinical Neurosciences Research Laboratory (LINC), Health Research Institute of Santiago de Compostela (IDIS), Santiago de Compostela, 15706, Spain

Spinal cord injury is a neurological and pathological state that causes motor, sensory and autonomic dysfunction. The corticospinal tract (CST) is one of the main motor tracts in the spinal cord, so damaging it causes a loss of fine motor movements and dexterity. The mouse model of unilateral pyramidotomy allows the study of compensatory sprouting in the CST axons. However, to date, surgery confirmation can only be performed postmortem using immunofluorescent staining. Prognosis biomarkers can help optimize animal care and minimize pain and suffering. In this context, magnetic resonance imaging (MRI) is an effective tool that allows for the comprehensive and non-invasive assessment of the progression of different types of CNS lesions. Moreover, in vivo preclinical CNS models can be used as their own control in longitudinal studies.

In this preclinical study, we proposed the use of MRI to assess the outcome of pyramidotomy surgery in C57BL/6 mice (n = 21). We examined the volume and T2-signal in the area occupied by the dorsal column (DC). We found non-significant changes, with none in the volume nor the T2-signal at any post-injury week. Then, knowing that the CST is a small tract in the DC, we measured the area occupied by the CST within the DC. Interestingly, we observed a general reduction in volumes, which was statistically significant at 7 days post-injury. On the other hand, we observed a decrease in the T2-signal following injury that was statistically significant from 14 days post-injury onward.

In conclusion, these results indicate that MRI could be a suitable tool to detect slight changes in the T2-signal in small regions in an earlier way to predict the efficacy of the surgery.

sciforum-112440: Multiple Sclerosis during COVID-19 and Occupational Hazards

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The occupational hazards and multiple sclerosis (MS) during the COVID-19 pandemic reveal a multifaceted interplay between mental health, work-related challenges, and the unique experiences of individuals with MS. The initial research highlights the significant work-related outcomes of healthcare workers with multiple sclerosis. A secondary meta-analysis study was conducted to provide a comprehensive examination of the current state of research regarding the occupational outcomes for individuals with multiple sclerosis. The study found that only 23% of participants experienced a relapse during the pandemic, yet more than half reported an increase in the frequency or severity of adverse MS symptoms, which were exacerbated by the occupational hazards during the COVID-19 pandemic's stressors. The correlation between increased chronic symptoms and higher perceived stress levels further emphasizes the psychological dimensions of living with MS during such a stressful period. This highlight the significant gaps in the literature, specifically noting the scarcity of longitudinal and interventional studies that could offer deeper insights into how occupational outcomes for MS have evolved and may have been exacerbated for this vulnerable population. The existing literature is limited in scope and lacks clear definitions regarding occupational outcomes, complicating the interpretation of findings. This study emphasizes the economic burden of MS on public health and the necessity for further research into the bio-psychosocial factors influencing work disability and potential protective elements that could enhance occupational outcomes. The findings point to the necessity of organizational interventions, such as the provision to mitigate these adverse effects, and underscore the significance of workplace policies in promoting mental well-being during crises. The evolving landscape of work-related issues in the context of chronic illness necessitates a nuanced understanding of how external factors, such as a global health crisis, can shape the experiences of affected individuals. There is a clear need for targeted interventions and further research.

sciforum-150374: The Impact of Neuropsychiatric Symptoms in Early-Stage Alzheimer's Disease and Mild Cognitive Impairment

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Introduction

Alzheimer's disease (AD) and mild cognitive impairment (MCI) are widely recognized for their hallmark cognitive deficits, typically characterized by progressive cognitive deterioration. However, neuropsychiatric symptoms (NPS) including depression, apathy, anxiety, irritability, and sleep disturbances are increasingly prevalent in early stages of these conditions and significantly influence disease trajectory and patient outcomes. Importantly, neuropsychiatric symptoms often precede overt memory loss by several years, with subtle mood and behavioral disturbances serving as early pre-diagnostic markers of underlying Alzheimer's pathology. Their presence complicates diagnosis, accelerates disease progression, and intensifies caregiver burden. However, distinguishing NPS arising from neurodegeneration from primary psychiatric disorders remain a profound diagnostic challenge, delaying timely intervention and obscuring early disease recognition.

Methods

A structured narrative review of peer-reviewed studies published between 2012 and 2025 was conducted using PubMed, MEDLINE, Scopus, PsycINFO, Google Scholar, and CINAHL to examine the diagnostic complexities, clinical impact, and current management of NPS in early-stage AD and MCI. We argue that understanding and managing NPS is essential to improving clinical outcomes and guiding therapeutic innovation.

Findings

NPS affects up to 80% of individuals with early AD or MCI, often preceding cognitive decline. Current management strategies rely heavily on non-pharmacological interventions such as caregiver support, behavioral activation, and structured routines, while pharmacological options remain limited by modest efficacy and safety concerns. Advancing knowledge of neuropsychiatric symptoms (NPS) and their association with cognitive decline is critical for establishing more precise diagnostic criteria and for informing personalized therapeutic approaches.

Conclusions

Not understanding the role and impact of neuropsychiatric symptoms in early-stage AD and MCI may have serious clinical, personal, and societal consequences. It may lead to delayed diagnosis, poor patient care, and increased caregiver stress and hampers both research and innovation. Recognizing NPS as early and integral features of disease progression is essential for transforming the diagnosis, care, and treatment of dementia-related disorders.

sciforum-137416: Vitamin D-binding protein gene variants and MS treatment response in Latvia

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Background

Vitamin D-binding protein (VDBP), encoded by the *GC* gene, governs vitamin D transport and bioavailability. Two common *GC* SNPs, **rs7041** and **rs4588**, influence serum vitamin D and may modify multiple sclerosis (MS) course and response to disease-modifying therapies (DMTs).

Aim

To determine whether rs7041 and rs4588 predict two-year treatment outcomes in Latvian MS patients.

Methods

We genotyped rs7041/rs4588 (restriction analysis) in 296 MS patients; 230 received 342 DMT courses. Clinical response was defined as a change in Expanded Disability Status Scale (EDSS) and the attainment of "no evidence of disease activity" (NEDA) over 24 months. Associations were analysed with χ^2/Fisher tests and multivariate logistic regression.

Results and Discussion

Our analysis revealed associations between *GC* gene variants and treatment outcomes in Latvian MS patients. The *rs7041 GG* genotype was linked to reduced mitoxantrone efficacy (OR 2.3, p = 0.02) and a lower chance of achieving NEDA in the first year (OR 1.9, p = 0.04). Conversely, *rs4588 CC* homozygotes showed a higher likelihood of sustained NEDA by year two (OR 2.1, p = 0.03). Neither SNP significantly influenced EDSS progression, and no relevant associations were found with other DMTs. These results indicate that *GC* polymorphisms may act as markers of therapeutic response, particularly regarding mitoxantrone and NEDA. Further studies are needed to explore the underlying biological mechanisms.

Conclusions

GC variants *rs7041* and *rs4588* affect MS treatment outcomes in Latvians. *rs7041 GG* is associated with a reduced benefit from mitoxantrone, while *rs4588 CC* correlates with more favorable NEDA results. These findings support the potential for genotype-guided therapy, pending further validation.

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sciforum-136137: Age- and Hypertension-Related Neurochemical Remodeling in the Jugular–Nodose Ganglion Complex of Rats: Asymmetry and Plasticity of CGRP, nNOS, and TTN3 Expression

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The jugular–nodose ganglion (JNG) complex of the vagus nerve is a key autonomic relay. However, how aging and hypertension affect its neuropeptide expression remains unclear. This study examined age-, strain-, and side-dependent expression of CGRP, nNOS, and TTN3 in spontaneously hypertensive (SHR) and normotensive Wistar-Kyoto (WKY) rats.

Methods

Male SHR and WKY rats were grouped as young (4–9 weeks), middle-aged (39–42 weeks), or old (60–63 weeks). JNG tissues were processed for immunohistochemistry with antibodies against CGRP, nNOS, and TTN3. Neuronal expression was quantified bilaterally and compared using unpaired and paired t-tests.

Results

In young rats, CGRP-positive neurons accounted for 11.05% in SHR and 0.98% in WKY ($p = 0.0007$); in middle-aged rats – 6.79% vs. 0.32% ($p < 0.0001$); no significant difference in old rats (28.36% vs. 34.45%, $p = 0.11$). nNOS expression was lower in young SHR (3.35%) than WKY (37.07%, $p = 0.01$) but similar in middle-aged (31.64% vs. 29.78%) and old rats (40.27% vs. 38.53%). TTN3-positive neurons were more frequent in SHR across all ages: young (70.13% vs. 47.23%, $p < 0.0001$), middle-aged (42.56% vs. 78.30%, $p = 0.0025$), and old (70.11% vs. 44.22%, $p = 0.0086$). Neuron size in SHR increased with age (Me = 23.23→24.97 μm^2), whereas WKY showed no significant change. Neuron density was higher in young SHR (762/mm^2) vs. WKY (608/mm^2) and declined with age. Ganglion area correlated positively with neuron number in young and middle-aged but not old animals.

Discussion

Hypertension induces dynamic, age-dependent neurochemical and morphological remodeling of the JNG. Elevated CGRP, reduced nNOS, and persistent TTN3 upregulation suggest adaptive–maladaptive interplay in baroreceptor pathways. Although these results were obtained in rats, the JNG shares key molecular features with the human vagus nerve. Direct evidence of age- or hypertension-related morphological changes in human vagal ganglia is still lacking, but many mammalian species exhibit comparable autonomic aging, supporting the translational relevance of these findings.

Session 2. Dementia Spectrum Disorders: From Frontotemporal Degeneration to Parkinson's and Alzheimer's Disease

sciforum-150068: Hospital Morbidity due to Parkinson's Disease in Brazilian Regions between 2020 and 2024

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Introduction: Parkinson's disease (PD) is a slow and progressive neurological condition that causes loss of functional movement in humans due to the destruction of dopamine-producing cells. As in the rest of the world, Brazil is also negatively affected by this disease. It is crucial to analyze hospital morbidity patterns in the country, given that this disease influences the five different Brazilian macroregions and may be related to certain common characteristics among them. Methods: A time series analysis of hospitalizations for Parkinson's disease over the last five years was performed. Macroregional data on hospital morbidity were selected and associated with their respective population projections, extracted from Brazil's public health database, DataSUS, to compare the prevalence of the disease in the five regions of the country. Results and Discussion: A total of 4,945 hospital admissions for PD were recorded during the study period. The Southeast region accounted for the highest number of admissions (2,294; 46.3%), followed by the South (1,413; 28.6%), Northeast (779; 15.7%), Central–West (275; 5.6%), and North (184; 3.7%) regions. The year 2024 had the highest incidence (1,227 cases; 24.8%), while 2020 had the lowest (349 cases; 7%). Considering population distribution, the South region had a disproportionately high rate of hospitalizations compared to its demographic size, suggesting a higher prevalence of the disease, better diagnostic capacity, or differences in access to healthcare. Conclusions: Hospital morbidity due to PD in Brazil reveals significant regional disparities, with the Southeast and South regions accounting for the majority of admissions. These findings highlight the need to strengthen diagnostic strategies, improve access to care, and adapt regional health policies to address the growing burden of PD. Further research is needed to explore the socioeconomic and health factors that influence these disparities.

sciforum-148569: Trends in hospitalizations for Alzheimer's disease in the Brazilian unified health system, 2016–2025: age group analysis and evidence of early-onset cases

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Introduction

Alzheimer's is the most common form of dementia, affecting memory, thinking, and behavior. It represents a public health challenge worldwide, and Brazil is no exception. Understanding hospitalization patterns for Alzheimer's is essential to identify at-risk populations and guide healthcare planning. This study analyzed DataSUS records, Brazil's public health database, over the past 10 years to provide insights into the epidemiology and inform strategies for early-onset cases.

Methods

A descriptive analysis of hospitalizations for Alzheimer's disease (ICD-10 G30) recorded in the SIH/SUS between 2016 and 2025 was conducted. Data were obtained from TABNET/DATASUS and categorized by age groups, which were subsequently regrouped into five strata (50, 50–59, 60–69, 70–79, and ≥80 years).

Results and Discussion

From 2016 to 2025, 15,198 hospitalizations for Alzheimer's disease (ICD-10 G30) were recorded in SIH/SUS, mostly in individuals aged ≥80 years (59.3%), followed by those aged 70–79 (28.1%) and those aged 60–69 (9.4%). Hospitalizations in those 60 years old were rare (2%), though they were present across all ages. Cases rose until 2019, dropped during 2020–2021 with the COVID-19 pandemic, peaked in 2023 (n=2,125), and declined in 2025, likely due to reporting delays. The proportion 65 years ranged from 2 to 6%, without a clear increase.

Findings confirm the predominance in older adults and the health system burden of advanced age groups, while the persistent, though infrequent, cases in those aged 65 highlight the need for awareness and tailored strategies for early-onset Alzheimer's disease.

Conclusions Sections

The analysis of DataSUS records confirms the predominance of hospitalizations for Alzheimer's among older adults, particularly those aged 80 years and above. These findings underscore the need for public awareness of early symptoms and appropriate patient care, as well as early diagnosis and targeted health strategies to address the challenges associated with the disease.

sciforum-137595: Incorporation of adaptogens in functional products as a preventive strategy for neurodegenerative diseases

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Introduction

Neurodegenerative diseases (ND), such as Alzheimer's and Parkinson's, represent a growing challenge for public health worldwide. Various studies warn that their incidence continues to rise and they are expected to become the second leading cause of death after cardiovascular diseases in the coming decades. In this context, current scientific evidence highlights the need for effective preventive strategies, with dietary intervention emerging as a promising approach.

Methodology

A systematic review was conducted analyzing evidence regarding adaptogens with potential effects preventing neurodegeneration. Studies published between 2018 and2025 were identified in PubMed, ScienceDirect, and Google Scholar. Selection was based on their relevance to the safety and efficacy as preventive compounds against neurodegeneration.

Results

Polyphenols, B vitamins, and certain dietary patterns have shown beneficial effects on key mechanisms involved in neurodegeneration, including inflammation, oxidative stress and mitochondrial dysfunction. In particular, resveratrol, hesperidin, theobromine, quercetin, and oleuropein have demonstrated neuroprotective properties. These effects are associated with mechanisms including CaMKII/CREB/BDNF activation, which is linked to cognitive and anti-inflammatory benefits, microglial inhibition via MAPK/NF- κB/PI3K/Akt, promotion of autophagy, blood–brain barrier protection, and mitigation of oxidative stress and neuronal apoptosis. These compounds can also be considered adaptogens, defined as natural substances that enhance the body's resistance to physical, chemical, or biological stress while exerting a normalizing influence on physiological functions. Their multifunctional properties may help regulate stress-related pathways involved in neurodegeneration. These compounds can be sustainably sourced from agri-food by-products, including grape skin, citrus peel, cocoa waste, apple peel, and olive leaves, and can be incorporated into functional food products as a preventive strategy for ND while promoting a circular economy.

Conclusions

This systematic review explores the potential of these bioactive compounds in the development of functional beverages for ND prevention, discussing their mechanisms of action, limitations, and the estimated impact of their application.

sciforum-135552: Investigation of the Effects of Mansorin on Memory Processes in a Zebrafish (Danio rerio) Animal Model

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Alzheimer's disease (AD) is a progressive neurodegenerative disorder affecting millions of people worldwide, with a major socio-economic impact. The limitations of current therapies and the associated adverse effects drive interest in natural compounds with therapeutic potential. Mansorine (MA), a coumarin compound extracted from Mansonia gagei, is known for its antioxidant and anti-inflammatory properties. The aim of this study was to evaluate the effects of mansorine on memory, using zebrafish (Danio rerio) as a preclinical model for AD.

To induce an AD-like amnesia model, fish were exposed to okadaic acid (OKA, 10 nM) for 4 days. Animals were divided into six groups (n = 10/group): control (DMSO), galantamine (GAL, 1 mg/L), OKA, and OKA co-treated with MA at 1, 3, or 6 μg/L. Mansorina was administered for 7 days, every 3 days during water exchange. Cognitive functions were assessed by Y-maze tests (spatial memory and locomotor activity) and novel object recognition (NOR). Data were analyzed with ANOVA and Tukey testing (GraphPad Prism 9, p 0.05).

Treatment with OKA significantly impaired spatial memory and object recognition (p 0.0001), while GAL reversed these deficits. Coadministration of MA (3 and 6 μg/L) significantly improved cognitive performance (p 0.001 – p 0.00001), increasing the exploration of the novel arm and novel object. MA also stimulated locomotor activity.

Conclusion: Mansorina can counteract OKA-induced cognitive deficits, posessing neuroprotective and cholinergic function restorative potential.

sciforum-149086: Neuroprotective Effects of 6-Paradol on Okadaic Acid-Induced Cognitive Impairment in Zebrafish

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Introduction

Alzheimer's disease (AD) is a debilitating neurodegenerative disorder characterized by progressive memory loss and cognitive decline. Natural compounds with antioxidant and anti-inflammatory properties are increasingly explored as potential therapeutic agents. 6-Paradol, a bioactive component of ginger, has demonstrated neuroprotective activity in preclinical studies. This study investigated the effects of 6-paradol on cognitive deficits induced by okadaic acid (OKA) in zebrafish (Danio rerio).

Methods

Adult zebrafish were exposed to OKA (10 nM) for 4 days to induce memory impairment and divided into six experimental groups (n = 10/group): control, galantamine (1 mg/L, positive control), OKA alone, and OKA combined with 6-paradol at 1, 3, or 6 μg/L. 6-Paradol was administered over 7 days with intermittent water changes. Cognitive performance was assessed using the Y-maze test (spatial memory) and Novel Object Recognition (NOR) test (recognition memory).

Results

Exposure to OKA significantly impaired both spatial and recognition memory. Galantamine reversed these deficits, validating the model. Treatment with 6-paradol at 3 and 6 μg/L significantly improved cognitive performance, increased exploration of the novel arm in the Y-maze, enhanced preference for the novel object in NOR, and stimulated locomotor activity. The lowest dose (1 μg/L) showed no significant effect.

Conclusions

These results suggest that 6-paradol mitigates OKA-induced memory deficits in zebrafish, likely through neuroprotective and cholinergic modulatory mechanisms. The findings support further investigation of 6-paradol as a candidate for AD therapy.

sciforum-125204: The Effects of Therapeutic Cannabis and Cannabinoids in Parkinson's Disease: An Overview of Meta-Analyses

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Background

Cannabis and cannabinoids have been investigated for their potential therapeutic effects in Parkinson's disease, but clinical findings remain scant and inconsistent. This study provides a systematic overview of meta-analyses assessing their impact on health outcomes in patients with Parkinson's disease.

Methods

A comprehensive search of PubMed, EMBASE, Web of Science, and Google Scholar (up to April 2025) identified meta-analyses evaluating cannabis-based interventions in Parkinson's disease. Eligible studies reported pooled estimates of effects on neurological symptoms. The most significant findings from the included studies were summarized and qualitatively analyzed.

Results

After screening a total of 975 research items, seven meta-analyses of clinical and laboratory studies, primarily randomized controlled trials (RCTs), were identified. One analysis of five RCTs demonstrated that pure CBD or synthetic THC significantly improved disease symptoms (SMD=−0.41, p=0.004). In contrast, a meta-analysis of three RCTs evaluating various cannabis extracts found no significant effect on the Unified Parkinson Disease Rating Scale (UPDRS) total score (SMD=−0.18, p=0.48). However, another analysis combining two RCTs and two non-RCTs reported a significant improvement in the UPDRS total score (MD=−4.19, p=0.03). With regard to pain management in Parkinson's disease, a study confirmed that cannabinoids are an effective treatment option. Additionally, a meta-analysis of preclinical studies in animal models indicated notable enhancements in motor function, with improved rotarod performance (MD=31.63 s, p=0.003) and reduced pole test times (MD=−1.51 s, p=0.028).

Conclusions

While meta-analyses of clinical studies suggest some benefits of specific cannabinoid formulations, findings are uncertain. Preclinical data, however, demonstrate interesting motor improvements. Further well-designed RCTs are warranted to clarify the therapeutic role of cannabis in Parkinson's disease management.

sciforum-147986: The Use of Visual Rating Scales in the Discrimination Between Alzheimer's Disease and Depression

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Background

The discrimination of dementia and depression remains an issue of debate as they often co-exist in late life. Various neuroimaging techniques have been used in an attempt to differentiate between the two entities. Visual rating seems to offer a quick and reliable tool for diagnosis. We performed a retrospective study to assess the potential role of the visual rating method to assist in the differential diagnosis of AD versus depression.

Methods

A sample of memory clinic patients fulfilling clinical criteria of either AD (n = 113) or depression (n = 139) was recruited. Depressive symptoms were defined as a score of 10 or higher on the GDS. Patients with AD were at a mild stage of disease (MMSE>23). Based on previous studies, 13 regions of interest were selected in both hemispheres, including mainly frontal, temporal and hippocampal areas. The regions were validated by two raters by using a visual scale with four stages of atrophy (0 to 4). Data were calculated using the binary logistic regression model.

Results

Based on visual assessment, patients with AD showed more atrophy in the right anterior cingulate cortex and in temporal, limbic and hippocampal regions in comparison to patients with depression.

Conclusions

Visual rating scales offer a useful method to distinguish between AD and deperession in clinical practice.

sciforum-150345: Trends in Mortality from Neurological Disorders in Rio Grande do Sul, Brazil (2013–2023): Alzheimer's Disease, Multiple Sclerosis, and Parkinson's Disease

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Introduction

Neurological disorders are an increasing public health concern worldwide, especially in aging societies. In Brazil, Rio Grande do Sul, with one of the country's highest life expectancies, illustrates how demographic shifts intensify the burden of neurodegenerative diseases. This study analyzed mortality trends from Alzheimer's disease (AD), multiple sclerosis (MS), and Parkinson's disease (PD) in Brazil between 2013 and 2023.

Methods

A retrospective, descriptive, population-based study was conducted using mortality records from the Brazilian Mortality Information System (DataSUS) for the period 2013–2023. Deaths attributed to AD, MS, and PD were identified. Absolute frequencies and proportional mortality rates were calculated, and temporal trends were examined to describe evolving patterns throughout the decade.

Results and Discussion

Between 2013 and 2023, 45,665 deaths due to neurological disorders were reported. AD accounted for 22,671 deaths (49.7%), MS for 5,095 (11.2%), and PD for 4,754 (10.4%). Overall neurological mortality more than doubled, rising from 2,701 deaths in 2013 to 5,528 in 2023. AD consistently represented about half of all cases, reaching 52.8% in 2022, whereas MS and PD maintained stable proportions near 11–12%. These findings mirror the progressive aging of Brazil's population, particularly in long-lived regions such as Rio Grande do Sul, where the demographic shift amplifies the burden of neurodegenerative diseases.

Conclusions

Neurological mortality in Brazil has more than doubled in the last decade, with AD as the leading cause. These trends underscore the need for strengthened public health strategies, better access to care, and research focused on early detection and management in aging populations.

Session 3. Stroke and Brain Injury

sciforum-136636: Integrating Sport-Based Exercise in Acquired Brain Injury Rehabilitation: A Biopsychosocial Perspective

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This trial aimed to evaluate the effectiveness of the sport-based exercise therapy program (sET) combined with usual care (UC) compared to UC alone in adults with an acquired brain injury (ABI). In a single-blind randomized controlled trial, 23 adults with an ABI, precisely with stroke and traumatic brain injury (mean age 59.6±10.3 years), were assigned to sET+UC (n=11) or UC (n=12). The intervention included sixteen 60-minute racket sport sessions plus UC, matched in duration and frequency with the control group. Outcomes included health-related quality of life (SF-36), upper limb motor control (FM-UE), functional capacity (6MWT, 10MWT), mobility (TUG), balance (BBS), and physical activity participation (GPAQ). Significant between-group differences were observed following the intervention. Participants in the sET+UC group demonstrated substantial improvements in both physical (p=.027, r=.46) and mental (p=.001, r=.71) components of the SF-36, and in FM-UE scores (p=.004, r=.60), all with moderate to large effect sizes. In addition, the intervention group showed statistically significant gains (p.05, r>.5) across functional capacity, balance, and overall physical activity participation. In contrast, the UC group showed only minimal, non-significant changes across all domains. This trial provides evidence supporting the integration of sport-based exercise therapy into conventional rehabilitation for adults with ABIs. The program not only enhanced physical and functional outcomes but also improved quality of life and physical activity engagement. These findings underscore the value of combining sport-based exercise as a complementary strategy to UC for enhancing multiple domains in this population. Furthermore, these findings emphasize the potential to optimize patient care by facilitating the transition from supervised exercise in rehabilitation community-grounded sports, filling a critical gap post-rehabilitation, thereby addressing critical gaps post-rehabilitation such as risks of sedentary behavior and social isolation. Larger studies with long-term follow-up are needed to confirm the sustainability and wider applicability of this approach.

sciforum-135227: Understanding and Managing Functional and Somatic Features in Persistent Post-Concussion Symptoms: A Clinical Framework and Observational Insights

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Approximately 20% of concussion/mild traumatic brain injury (mTBI) patients experience persistent post-concussion symptoms (PPCSs) beyond four weeks. Functional neurological disorder (FND) and somatic symptom burden are frequent, overlapping contributors in such cases, yet practical guidance for differentiating and managing these mechanisms remains limited.

We present a clinical framework integrating literature review, neurobiological models (central sensitization, fear-avoidance, predictive processing), and observations from a specialized neuropsychiatry practice. Case prototypes illustrate functional versus somatic presentations. Clinical experience from recent consecutive evaluations (October 2024–October 2025) informed symptom patterns and treatment approaches, including tailored medication, specialized rehabilitation, and cognitive reframing.

Among patients evaluated for PPCS during this period, the majority showed prominent somatic symptom burden, with a substantial minority meeting FND criteria. Functional presentations were associated with greater somatic burden and psychiatric comorbidities. Anecdotally, most of those who engaged in cognitive reframing and individualized care strategies reported improvement at follow-up (as measured by CGI-I), although formal outcome data are needed. These patterns, combined with existing literature supporting the preventive role of early education after concussion, suggest a potential opportunity for targeted early intervention.

Somatic and functional features are prevalent contributors to PPCS. A structured, neurobiologically informed approach can clarify symptom mechanisms and guide care. Differentiating these symptom drivers early and communicating a positive, reversible narrative may improve outcomes. Formal retrospective and prospective studies are warranted. Based on these insights, we are developing a randomized controlled trial to assess whether brief early cognitive framing can reduce PPCS incidence and healthcare utilization. Furthermore, while functional-specific rehabilitation protocols exist, there is a need for validated somatic-focused interventions.

sciforum-114271: 4-Hydroxyphenyllactic acid ratio in the blood serum and cerebrospinal fluid of patients with long-term sequelae of severe brain damage as a possible marker of the secondary bacterial meningitis

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Introduction

Some metabolites of aromatic amino acids are known to be of microbial origin [https://doi.org/10.1038/nature24661]. Elevated concentrations of microbial 4-hydroxyphenyllactic acid (p-HPhLA) in cerebrospinal fluid (CSF) have previously been detected in post-neurosurgical patients with signs of secondary bacterial meningitis in comparison to those without signs of secondary bacterial meningitis [https://doi.org/10.3390/jpm12030399].

Objectives

To assess the ratio of p-HPhLA in serum and CSF samples collected simultaneously from patients with long-term sequelae of severe brain damage with suspected secondary bacterial meningitis.

Methods

Blood (n=29) and CSF (n=29) samples were collected simultaneously within one day from patients (n=15) with long-term sequelae of severe brain damage with suspected secondary bacterial meningitis. Group I included 16 paired serum and CSF samples from patients without secondary bacterial meningitis (n=11, 8 men, 3 women, aged from 21 to 82); group II included 13 paired serum and CSF samples from patients with secondary bacterial meningitis (n=4, 2 men, 2 women, aged from 22 to 65). p-HPhLA concentrations were detected using HPLC-MS/MS.

Results

Median p-HPhLA concentrations in serum: group I—975 nmol/l; group II—1676 nmol/l; Mann-Whitney U-test, p-value, - 0.008. Median p-HPhLA concentrations in CSF: group I—414 nmol/l; group II—2578 nmol/l; Mann-Whitney U-test, p-value, 0.001. In group I, p-HPhLA concentrations in serum were higher than those in CSF in 13 of 16 samples; in group II, p-HPhLA concentrations in serum were lower than those in CSF in all samples.

Conclusions

The obtained results may confirm the hypothesis of the microbial origin of p-HPhLA in CSF in patients with secondary bacterial meningitis.

sciforum-148100: A Hybrid Deep Ensemble Framework with CNN Transformer Feature Fusion for Stroke Detection from Neuroimaging Data

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Introduction

Stroke remains a major global cause of death and long-term disability, emphasizing the need for rapid and accurate diagnosis to support timely clinical decisions.

Methods

This study proposes a hybrid deep ensemble framework that integrates convolutional neural networks (ResNet50) and transformer-based models (Swin Transformer) to detect stroke from multimodal neuroimaging data. A publicly available Kaggle dataset comprising 5,336 CT and MRI scans from 230 participants (113 females, 117 males) was used, including 2,695 stroke and 2,641 control images. Features extracted from both networks were fused into a unified representation and reduced using PCA-based cumulative weighted neighborhood component analysis (CW-NCA). The reduced features were classified using a stacking ensemble of k-nearest neighbors, a support vector machine (SVM), XGBoost, and multilayer perceptron (MLP), with a linear SVM as the meta-learner.

Results

The proposed model achieved a validation accuracy of 94.10%. For the Normal class, the precision, recall, and F1-score were 93.80%, 94.33%, and 94.06%, respectively. For the Stroke class, the precision, recall, and F1-score were 94.40%, 93.88%, and 94.14%, respectively. The model demonstrated balanced performance across both classes, indicating robustness and reduced bias.

Discussion and Conclusions

Compared with single-model CNN or transformer methods, the hybrid ensemble exhibited superior generalization and class stability. These findings suggest that the proposed framework can serve as a promising decision-support system for early stroke detection, helping clinicians achieve faster and more reliable diagnoses.

sciforum-150397: Colloid Cysts: A 15-Year Retrospective Review of Clinical Presentation and Outcomes

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Introduction

Colloid cysts of the third ventricle are uncommon but clinically significant. Some remain silent and are found incidentally, while others cause sudden neurological deterioration. In a few cases, this can be fatal without urgent treatment. Surgery is the mainstay, although complications are well recognized. We reviewed our experience over 15 years.

Methods

We carried out a retrospective review of patients treated surgically for colloid cysts between 2010 and 2025. Hospital records were used to collect information on demographics, clinical features, operative details, and complications. Descriptive statistics were applied. This was a small cohort.

Results

Fifteen patients were included. The mean age was 30 years (9 males, 6 females). More than half were diagnosed in the emergency department (53%). Four patients (27%) were detected incidentally and three (20%) were diagnosed in clinic. Headache was the most common symptom (87%). Nausea and vomiting were noted in 47%. Seizures occurred in two patients, and three presented with coma or rapid decline. Papilledema was documented in four. All underwent surgical resection, and some required perioperative shunts. Early complications were frequent, affecting 53%. Late complications were even more frequent, recorded in 87%. Memory problems were reported in 60% of patients. The median hospital stay was 11 days.

Conclusions

In our setting, colloid cysts showed varied presentations. Surgery was effective, but complications—especially cognitive issues—were common. Careful perioperative planning and follow-up remain essential.

sciforum-146545: Factors Influencing Sleep and Post-Discharge Care-Seeking Attitudes in Hospitalized Stroke Patients: A Regional Study in Wales, UK

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Background

Sleep disruption is a prevalent yet under-recognised issue among stroke patients, with growing evidence suggesting its adverse impact on neurological recovery and rehabilitation. This study explores the causes of in-hospital sleep disturbances and evaluates post-discharge care-seeking behaviours in a stroke patient cohort.

Methods

A retrospective cohort study was conducted at Wrexham Maelor Hospital, North Wales, using data from the Sentinel Stroke National Audit Programme (SSNAP), the Welsh Clinical Portal, and the EPOC from March 2024 to March 2025. A structured questionnaire was administered post-discharge to assess self-reported sleep quality across three time periods: pre-stroke, during hospitalisation, and after discharge. Contributing factors to sleep disturbance and patient interactions with healthcare providers regarding sleep concerns were also examined.

Results

Among 225 stroke patients, environmental factors were the most frequently reported causes of in-hospital sleep disruption, with noise (n=139) being the leading factor, followed by clinical interventions (n=82), lighting (n=36), anxiety/stress (n=23), pain (n=22), and disability (n=19). Despite widespread disturbances, only 13.3% of patients reported discussing sleep issues with their general practitioner post-discharge, and fewer than 10% received any formal management for sleep-related concerns.

Conclusions

The findings highlight a clear gap between the clinical importance of sleep and its recognition in stroke care. Environmental disruptions during hospitalisation are a key modifiable contributor to poor sleep, yet patient concerns are seldom addressed in post-discharge settings. Integrating routine sleep assessments and environmental interventions into stroke care pathways is essential for promoting recovery and improving quality of life.

sciforum-150148: Glioblastoma histological region-dependent differential expression of *ITGA1* and *NID2* genes encoding adhesion proteins to extracellular matrix

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Modifications of cell adhesion and remodeling of the extracellular matrix (ECM) occur in the brain under physiological conditions (e.g., during embryonic development and in neuronal plasticity) and in pathological microenvironments (e.g., in hypoxia-dependent angiogenesis in cancer or strokes, or with the migration of the tumor cells themselves). Glioblastoma is the most common and devastating type of primary brain tumor, for which the standard of care has largely remained unaltered since 2005. Here, we wanted to study possible changes in both *ITGA1* (which encodes the integrin alpha-1 protein, a receptor for collagen) and *NID2* (which encodes the nidogen-2 protein in basement membranes, a protein that binds to collagen) mRNA levels based on anatomic features classified as pseudopalisading cells around necrosis (PAN), microvascular proliferation near the pseudopalisading cells (MVP), and cellular tumors (CTs) in human glioblastoma. Primary data were collected from the Ivy Glioblastoma Atlas Project, a public anatomic transcriptional database, from in situ hybridization (ISH) in glioblastoma blocks. To better compare the results, we selected images with similar architectures to PAN, MVP, and CT regions. Our results indicate that *ITGA1* and *NID2* genes are poorly expressed in the PAN region, which contrasts with their very high expression in the adjacent MVP zone. In addition, the *ITGA1* and *NID2* genes are expressed at low-medium levels in the CT areas underlying the MVP region. Other genes with the same biological function, such as *BCAN* and *DDR1*, do not show significant area-dependent transcriptional variations. Therefore, our results suggest that cell–matrix adhesion could be decreased in the PAN structure (stimulating pseudopalisading cell migration) but increased in the MVP region (promoting ECM deposition and stabilizing the vascular bed growth). Furthermore, all these results also suggest that elevated *ITGA1* and *NID2* expression is positively correlated with increased neovascularization, and that they could be a potential target for therapeutic intervention.

sciforum-148571: Heterogeneous distribution of *BNIP3* and *HIF1A* expression in the anatomic structures of glioblastoma

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Glioblastoma is the most common primary brain tumor in adults. With a poor prognosis, its treatment has barely advanced in the last twenty years. High cell densities limit the availability of nutrients/oxygen, leading to necrosis and/or endothelial and microvascular proliferation. However, it exhibits a high capacity for survival, in which glioblastoma stem cells and autophagy may be involved. The objective of this study was to evaluate, among the different histological structures of glioblastoma, the expression of *BNIP3* (its product induces autophagy (mitophagy) by direct interaction with LC3B-II) and one of its transcriptional regulators, *HIF1A* (the O_2-regulated protein promotes adaptation to hypoxia). The results were obtained from the analysis of in situ hybridization (ISH) images in glioblastoma sections, stored in the free database Ivy Glioblastoma Atlas Project. All patients we studied showed high levels of *BNIP3* mRNA in the perinecrotic pseudopalisading areas, and medium expression in the vessel walls and even in the infiltrating tumor region. From the pseudopalisading regions around necrosis, *BNIP3* transcription decreased significantly as we advanced into the tumor. Interestingly, only some patients showed expression (and in these cases, high expression) of *HIF1A* in the pseudopalisading formations, although *HIF1A* was expressed, at variable levels, in the vessel walls. These results indicate anatomy-dependent levels for the mRNA encoding BNIP3 and HIF1A in glioblastoma. Furthermore, they suggest strong mitophagy activation in the pseudopalisading cells, as well as mechanisms regulating *BNIP3* mRNA levels independent of *HIF1A* expression. These mechanisms could be other transcriptional factors, such as E2Fs, FOXO3, TP53, and NFKB, and/or a regulation by stabilization of the HIF1A protein under hypoxia. Our data could also be applied to other brain pathologies, where low oxygen levels contribute to tissue damage.

sciforum-149821: Nonspecific expression of the angiogenesis gene *BTG1* in glioblastoma

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Disturbances in oxygen concentration, particularly hypoxia, occur in different pathological conditions, as in tumors, and hypoxia can also cause brain damage in strokes. One tissue response to low oxygen levels is the activation of angiogenesis. In glioblastoma, the most common primary brain tumor in adults, with a poor prognosis, microvascular proliferation in response to hypoxia is common. The Public Ivy Glioblastoma Atlas Project – Allen Institute for Brain Science contains an expression data set for 37 genes enriched in glioblastoma, and we have verified that at least 5 (*ADGRL4, BTG1, ENPEP, ESM1,* and *STC1)* are directly involved in angiogenesis. This study aims to investigate mRNA levels of these genes in different histologically-defined glioblastoma regions. To better compare the results obtained from in situ hybridization (ISH) in glioblastoma blocks, we selected images with a similar tissue architecture, specifically perinecrotic pseudopalisading regions with an underlying zone of a cellular tumor. Our primary results show that *ADGRL4, ENPEP, ESM1,* and *STC1* genes were mainly expressed (in medium-high levels) in the endothelium of hyperplastic blood vessels that accumulated near the pseudopalisading cells. Nevertheless, the *BTG1* gene (the protein that positively regulates endothelial cell differentiation and angiogenesis) was ubiquitously expressed (also at medium-high levels), both in the previous vessel regions and in the pseudopalisading around necrosis areas and the rest of the tumor. We used DDR1 as a control gene that is not expressed in endothelial cells. Our preliminary data also suggest a similar spatial distribution of *ADGRL4, BTG1, ENPEP, ESM1,* and *STC1* expression in patients with different molecular subtypes of glioblastoma: classical, proneural, classical-mesenchymal, and neural-proneural. We conclude that *ADGRL4, ENPEP, ESM1,* and *STC1* genes appear to be preferentially expressed in the endothelium of the glioblastoma microvasculature; however, *BTG1* appears to show a ubiquitous distribution within the tumor. The functional significance and possible therapeutic relevance remain to be demonstrated.

sciforum-140076: Sport-Based Exercise in Pediatric Acquired Brain Injury

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Background/Objectives

Pediatric acquired brain injury (ABI) frequently produces persistent motor, cognitive and psychosocial deficits that impair quality of life (QoL), participation and physical activity. Multidimensional interventions aligned with the International Classification of Functioning, Disability and Health (ICF) framework are required. Sport-based interventions. when adapted to developmental stages and individual preferences, may enhance motivation, peer interaction and sustained participation, yet standardized protocols for pediatric ABI are scarce. This study describes a randomized controlled trial protocol evaluating the effectiveness of a 16-week sport-based exercise program designed for adolescents with ABI.

Methods

This two-arm parallel trial (ClinicalTrials.gov NCT06804486) follows SPIRIT and CONSORT guidelines and received approval from the Regional Ethics Committee of Madrid (EC 33.25). Ninety adolescents (11–17 years) with a subacute or chronic ABI will be recruited at Hospital Niño Jesús (Madrid, Spain). Eligibility requires confirmed ABI, the ability to follow simple instructions and the absence of medical contraindications for exercise. Participants will be allocated 1:1 by centralized, computer-generated stratified block randomization (strata: age group); allocation concealment will be ensured by an independent statistician. The experimental arm will receive supervised sport-based sessions (60 min, twice weekly for 16 weeks) plus usual care; the control arm will receive usual care alone. Outcome assessors will be blinded. Treatment fidelity will be ensured by a manualized protocol, provider training, session fidelity checklists, attendance logs and biweekly follow-up calls. Primary outcomes (pre/post) are QoL (PedsQL), participation (CASP), physical activity (GPAQ) and motor proficiency (BOT-2). Analysis follows intention-to-treat principles; mixed-effects models will test group×time effects with adjustment for baseline covariates. Sample size: n = 90 (45 per group). Calculation will be based on PedsQL variability (SD ≈10), α=0.05, power=80%, with a 15% attrition adjustment (see manuscript for details).

Discussion

The trial tests a pragmatic, reproducible sport-based model bridging clinical rehabilitation and community participation, integrating motor and psychosocial targets to promote sustainable engagement in adolescents with ABI.

sciforum-150172: Trends in Meningitis Lethality by Etiology in Brazil: A Temporal Analysis from 2015 to 2024

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Introduction

Meningitis remains a major global public health concern, ranking among the most lethal infectious diseases and potentially causing brain injury if not promptly diagnosed or treated. Analyzing mortality trends by causative agent in Brazil helps identify patterns, assess the impact of prevention strategies, and guide effective health policies and clinical practices.

Methods

This retrospective descriptive study used SINAN data from 2015 to 2024, stratified by etiology and organized into time series to identify trends.

Results

From 2015 to 2024, viral meningitis — the most prevalent form in Brazil — decreased in total cases but showed higher lethality, rising from 113 deaths among 7,183 cases (1.6%) to 41 deaths among 1,767 cases (2.3%). Meningococcal meningitis followed a similar pattern, with lethality increasing from 38.1% (388 cases) in 2015 to 39.7% (78 cases) in 2024. Pneumococcal and *Haemophilus influenzae* meningitis also declined in incidence but had rising lethality (12.1% to 15.3% and 16.8% to 22.2%, respectively). Tuberculous meningitis remained highly lethal, from 55 deaths among 347 cases (15.9%) in 2015 to 21 deaths among 151 cases (13.9%) in 2024. Meningitis of unspecified etiology remained frequent, decreasing from 2,499 to 934 cases, with lethality dropping from 10.9% to 8.7%.

Discussion and Conclusions

The results show a concerning pattern: meningitis lethality in Brazil has increased across several etiologies despite a reduction in overall cases. This discrepancy suggests that current prevention and control measures reduce transmission but have limited impact on disease severity and outcomes. Possible contributing factors include delayed diagnosis, gaps in healthcare access, antibiotic resistance, and limited availability of advanced care in some regions. These elements may lead to late treatment initiation, increasing the risk of neurological complications and death. Strengthening Brazil's healthcare response through faster, more accurate diagnostics, timely therapy initiation, and broader access to effective antimicrobials is essential. Enhanced management strategies to prevent brain injury are particularly critical, as the rise in lethality likely reflects not only treatment delays but also increased neurological damage among survivors.

Session 4. Sleep Disorders

sciforum-137415: From Sweeteners to Sleeplessness: The Hidden Effects of Sucralose and Saccharin on the Gut–Brain Axis

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Sweetener consumption has increased considerably in recent decades, driven by the growing demand from consumers seeking low-calorie products for weight control and especially from diabetic patients who require safe sweetener alternatives without affecting their glucose levels. However, the latest scientific evidence seems to indicate that the continued consumption of various sweeteners could significantly alter the gut microbiota, triggering consequences that go beyond metabolic health and could affect sleep quality.

Among the most used non-caloric sweeteners in the food industry are sucralose and saccharin. Several studies have shown that prolonged consumption of these sweeteners can significantly alter the composition of the gut microbiota. In particular, a decrease in beneficial bacteria such as *Lactobacillus* and *Bifidobacterium* has been observed, accompanied by an increase in potentially pathogenic microorganisms such as *Clostridium difficile* and *Escherichia coli*. This dysbiosis generates a chronic low-grade inflammatory environment and contributes to the deterioration of glucose metabolism, factors that negatively impact the regulation of the gut–brain axis. Consequently, these alterations could interfere with the neuroendocrine mechanisms involved in sleep, promoting the development of disorders such as insomnia, sleep fragmentation, and decreased subjective sleep quality.

The aim of this systematic review is to synthesize the current scientific evidence on the impact of artificial sweeteners on the gut microbiota and their potential involvement in sleep disorders. The underlying biological mechanisms will be analyzed and the clinical relevance of these interactions will be discussed, laying the groundwork for future research that will contribute to the development of dietary recommendations and therapeutic strategies aimed at modulating the microbiota to improve sleep health.

Session 5. Chronic Pain and Headaches

sciforum-150159: Alternative Injectable Therapies for Trigeminal Neuralgia: A Systematic Review of Efficacy and Safety

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Background

Trigeminal neuralgia (TNN) is a disabling facial pain disorder marked by sudden unilateral paroxysms, most often in the maxillary or mandibular branches. Prevalence is 4–29 cases per 100,000 persons, with female predominance. Pharmacological therapy is a first-line treatment and microvascular decompression is the surgical standard, but both are limited by resistance, intolerance, or procedural risk. Injectable therapies have recently emerged as minimally invasive alternatives. This review systematically evaluated their efficacy and safety in TNN.

Methods

A systematic search of PubMed (MEDLINE) and the Cochrane Library was performed for studies published between 2015 and 2025 using the terms “trigeminal neuralgia AND injection.” Eligible studies were randomized trials or cohort studies including ≥20 adults with classical TNN treated by injectable therapies and reporting pain or safety outcomes. From 363 records, 13 studies met inclusion criteria.

Results

Thirteen studies (seven randomized trials; six cohorts; ~840 patients) were analyzed. Botulinum toxin A (BTX-A) was most studied (n = 27–152), reducing pain by 40–70% and attack frequency by up to 60%, with ≥50% responders in 55–91% and relief lasting 3–6 months. A pilot trial (n = 81) found single-dose BTX-A more durable than repeated dosing. Ozone therapy (n = 103) lowered VAS from 8.1 to 2.9 at 12 months. Calcitonin-enhanced blocks (n = 30, n = 33) prolonged analgesia up to 35 weeks and reduced drug use. Corticosteroid–anesthetic blocks (n = 72), bupivacaine adjuncts (n = 73), and guanfacine–lidocaine (n = 37) also showed significant benefits. Adverse effects were mild and transient.

Conclusions

Injectable therapies demonstrate consistent efficacy and safety in TNN. BTX-A and calcitonin have the strongest evidence, while other modalities remain promising but less studied. They may represent a minimally invasive option for refractory patients pending validation in larger multicenter trials.

sciforum-149175: Epilepsy in the Brazilian Public Health System: Trends, Access to Care, and Costs (2015–2024)

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Introduction

Epilepsy is one of the most prevalent chronic neurological disorders, associated with significant morbidity, higher risk of injuries, premature mortality, and socioeconomic impact. Analyzing national indicators is essential to understand regional disparities and support public policies aimed at early diagnosis, treatment, and prevention.

Methodology

This is a retrospective descriptive study based on DATASUS data (2015–2024), including records of hospital admissions, deaths, standardized rates and mortality rates due to epilepsy (ICD-10 G40). Temporal trends and regional differences were analyzed.

Results and Discussion

The data revealed a total of 560,830 hospitalizations during the analyzed period. Among the results, the Southeast region presented the highest number of hospitalizations (231,111), while the North region registered the lowest (31,342). Regarding mortality, the Southeast also accounted for the highest number of deaths (7,253), whereas the North recorded the lowest (752) in the same period.

The annual analysis demonstrated a progressive increase in mortality rates, with the highest rate observed in 2024 (3.0%), followed by 2023 (2.89%) and 2022 (2.75%). The lowest rates were recorded between 2015 (2.23%) and 2019 (2.38%). Therefore, consistent with the findings reported by Ling-Zhi Yang et al., epilepsy remains an important cause of disability and mortality, as evidenced by the data from the analyzed period.

Conclusions

Epilepsy remains a significant burden on the Brazilian public health system, with increasing admissions, rising costs, and persistent regional disparities. Expanding access to diagnostic tools, specialized consultations, and a continuous supply of antiepileptic drugs is crucial to reduce mortality and healthcare expenditures. However, this study is limited by its reliance on secondary data from DATASUS, which may be subject to underreporting, coding inconsistencies, and a lack of clinical details, potentially underestimating the true burden of epilepsy.

sciforum-135589: Psychological Approaches to Intractable Chronic Pain: A Comprehensive Review of Clinical, Hospital, and Health Psychology Interventions

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Introduction

Intractable chronic pain affects approximately 1.5 billion people worldwide, representing a complex syndrome that transcends physical symptomatology to encompass psychological, social, and functional dimensions. This condition demonstrates significant comorbidity with depression (39.3% prevalence) and anxiety, necessitating specialized psychological interventions. The objective of this study was to systematically examine evidence-based psychological interventions for intractable chronic pain management within clinical, hospital, and health psychology frameworks.

Methods

A comprehensive systematic review was conducted across major biomedical and psychological databases including PubMed, PsycINFO, and Cochrane Library. Search terms included chronic pain, psychological interventions, cognitive-behavioral therapy, acceptance and commitment therapy, mindfulness-based interventions, and positive psychology approaches. Inclusion criteria encompassed adult populations with a chronic pain duration >3 months, experimental or quasi-experimental designs, and peer-reviewed publications from the last decade. Quality assessment was performed using established methodological criteria.

Results

Evidence demonstrates that multimodal psychological interventions produce significant improvements across multiple domains. Cognitive-behavioral therapy showed small to moderate effect sizes for pain intensity, physical functioning, and emotional well-being with sustained long-term benefits. Acceptance and commitment therapy effectively reduced depression symptoms, anxiety, psychological inflexibility, and pain catastrophizing while improving mindfulness and psychological flexibility. Mindfulness-based interventions (MBSR/MBCT) demonstrated significant reductions in pain intensity and psychological distress with associated neurobiological changes in pain-processing brain regions. Positive psychology interventions improved mental health outcomes, particularly well-being, life satisfaction, and psychological resilience. Multidisciplinary pain management programs integrating psychological components showed superior outcomes compared to single-modality treatments.

Conclusions

Specialized psychological interventions represent essential components of comprehensive chronic pain management. The evidence supports the implementation of integrated, multidisciplinary approaches that address biological, psychological, and social dimensions of intractable chronic pain. Clinical psychologists in hospital and health settings provide crucial expertise in assessment, treatment, and interdisciplinary coordination, significantly improving patient outcomes and quality of life.

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