28th INTERNATIONAL MONDSEE MEDICAL MEETING

ÖGNIM
Österreichische Gesellschaft
für neurologische und neurochirurgische Intensivmedizin

sponsor
EVER PHARMA

IMMM Report | 19 September 2025 | Salzburg, Austria

Optimizing treatment concepts in Cerebrovascular emergencies

Optimizing treatment concepts in Cerebrovascular emergencies

TABLE OF CONTENTS

Introduction

In September 2025, the 28th International Mondsee Medical Meeting (IMMM) took place in Salzburg, Austria. The Austrian Society for Neurointensive and Emergency Medicine (ÖGNIM) welcomed over 250 delegates, including 13 speakers from 8 different countries.

The focus of IMMM 2025 was on optimizing treatment concepts in cerebrovascular emergencies. This topic was discussed in exciting case presentations, new and ongoing study data and a lively panel discussion. Participants could also choose between two different workshops at the end of the day.

This report summarizes the highlights of this scientific event. The first session started with an introduction by Chair Dr. Jennifer Manzano from the Philippines.

Jennifer Manzano

MD, Head of Asian Hospital and Medical Center – Asian Brain Institute, 2205 Civic Dr, Muntinlupa, 1780 Metro Manila, Philippines

Session 1 – Cerebroprotective treatment strategies after stroke
Introduction

Dr. Manzano opened the session on optimizing treatment in cerebrovascular emergencies. She questioned whether recanalization alone is sufficient in acute ischemic stroke, noting that while reperfusion is the gold standard, many patients still do not achieve good recovery. *(Figure 1)*

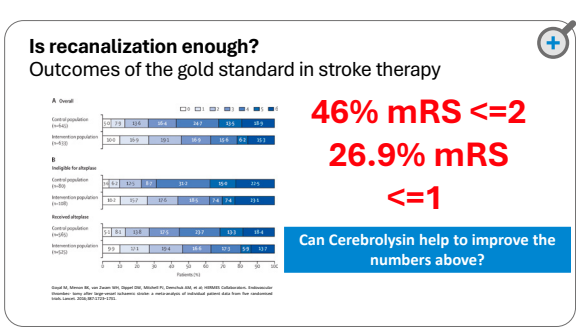


Figure 1

She highlighted the need for additional strategies such as physiological cerebroprotection and effective cerebroprotective agents. Among these, only Cerebrolysin has shown strong evidence for improving motor function, language recovery, daily living, quality of life and reducing depression. *(Figure 2)* It is now recommended in several international guidelines, particularly as adjunct therapy in moderate to severe stroke.

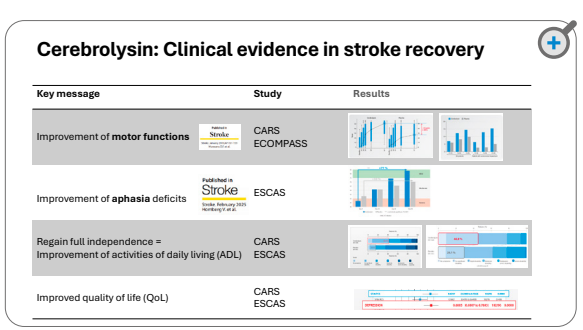


Figure 2

Cerebrolysin works by reducing inflammation, protecting the blood-brain barrier and supporting neuroplasticity. Dr. Manzano then introduced the three speakers of the first session: Sławomir Michalak, Jacek Staszewski and Dafin Muresanu.

WATCH THE WHOLE SESSION NOW!
webinar.everpharma.com/immm2025-manzano/

Sławomir Michalak

Prof., MD, PhD, Institute of Neurological Disorders,
Przybyszewskiego str. 49, 60-355 Poznan, Poland

Effect of Cerebrolysin on circulating tight junction proteins after reperfusion therapy

ABSTRACT

Background and Aims: Experimental studies revealed that Cerebrolysin affects the integrity of the blood-brain barrier (BBB). Our objective was to investigate whether Cerebrolysin stabilizes the BBB in a way that can be monitored by measuring the serum levels of key tight junction (TJ) proteins, specifically occludin (OCL), claudin-5 (CLDN-5), and zonula occludens-1 (ZO-1).

Methods: Cerebrolysin effect on Blood-brain barrier/Endothelium integrity during Reperfusion therapy of acUte ischemic Stroke (CERBERUS Study;Clinical Trials 392/23) is single-center, prospective, randomized study. It included 368 patients with ischemic stroke, treated according to the AHA/ESO guidelines. Patients randomized to receive Cerebrolysin were administered 30 ml intravenously within 12 hours of symptom onset, while the control group received a crystalloid solution. Blood samples were collected upon admission, within 1 to 3 days, and on the 7th day after stroke onset.

Results: Decrease in NIHSS (-5.0;-10.0 to -1.0; P<0.0001) in patients on Cerebrolysin was observed at 7th day. We have found that patients treated with Cerebrolysin had lower CLN5 (P=0.017) at 3rd day and lower OCL and CLDN5 concentrations on day 7th. Patients with hemorrhagic transformation and on Cerebrolysin had lower (P<0.001) OCL and CLN5 concentrations than persons not treated with Cerebrolysin. Patients treated with Cerebrolysin as adjunct to recananlization (rTPA/MT) had a lower OCL (P=0.0009) and CLN5 concentration on day 7 compared to non-Cerebrolysin persons.

Conclusion: Cerebrolysin as an add-on to reperfusion therapy in stroke patients has the potential to rearrange tight junction proteins and to stabilize BBB integrity.

LECTURE SUMMARY

Prof. Michalak discussed tight junction proteins and their role in maintaining blood-brain barrier (BBB) integrity. Tight junctions, including transmembrane proteins (occludin, claudin, Junctional adhesion molecules) and cytoplasmic proteins (ZO-1), are crucial for controlling molecular transport and cell migration. Disruption of these proteins, caused by ischemia, hypoxia, inflammation, or oxidative stress, can lead to hemorrhagic transformation and futile reperfusion after stroke, despite successful mechanical thrombectomy. *(Figure 3)*

The presentation emphasized Cerebrolysin, a cerebroprotective agent, which stabilizes the BBB, reduces inflammatory response, protects against apoptosis and enhances neurogenesis. Experimental and clinical studies show that Cerebrolysin increases expression of tight junction proteins in brain vessels while reducing their release into the blood, indicating BBB stabilization. *(Figure 4, 5)*

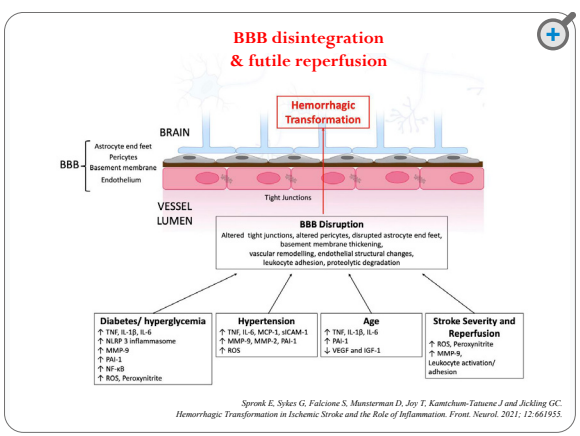


Figure 3

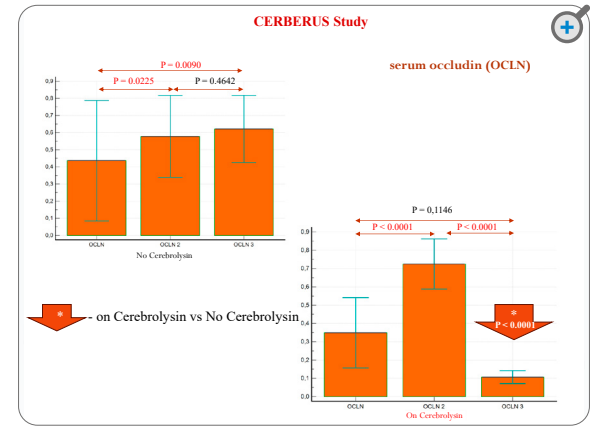


Figure 4

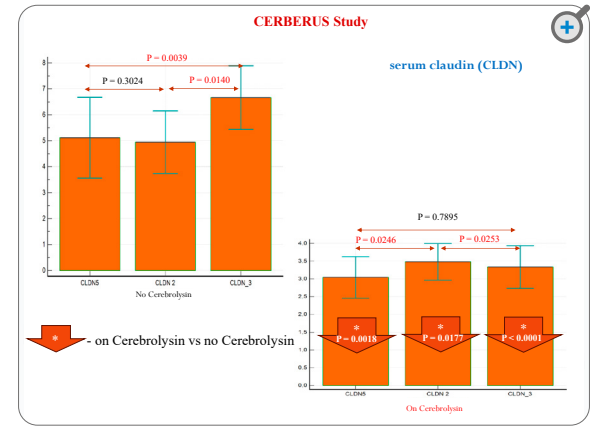


Figure 5

WATCH THE WHOLE SESSION NOW!
webinar.everpharma.com/immm2025-michalak/

Jacek Staszewski

MD, PhD, Military Institute of Medicine,
Szaserow 128, Warsaw, Poland

Cerebroprotection as an Adjunct to Mechanical Thrombectomy

ABSTRACT

Background and Aims: We hypothesized that Cerebrolysin, a multimodal cerebroprotective agent, enhances the efficacy and safety of mechanical thrombectomy (MT) <6 hours of stroke onset in patients with good collateral status and effective recanalization (mTICI 2b-3).

Methods: A single-center, prospective, open-label, single-arm study with blinded outcome of 50 consecutive patients with moderate-to-severe stroke treated with Cerebrolysin alongside MT (30 ml iv for 21 days, first cycle) and in a recovery phase (between 69-90 days, second cycle) compared to 50 historical controls matched by propensity scores.

Results: Patients receiving Cerebrolysin had higher odds for functional independence (68% vs 44%, p=0.01, OR 2.7, 95%CI 1.2 - 6.1; NNT: 4.2) at 90-days, and 360-days (OR 3.3, 95%CI 1.4-7.7), had lower risk of early secondary ICH (14% vs 40%, p=0.02; RR 0.37; 0.14-0.95), and greater neurological improvement at 24 hours (mean ΔNIHSS 8.2 vs 5.1, p=0.01) and at 7 days (10.4 vs 6.9, p<0.01). Multivariate analysis identified Cerebrolysin as an independent predictor of favorable outcomes (OR 7.5;1.8–30.9) at 90-days, particularly in patients with diabetes (interaction OR 10.7; 1.07–107). The overall mortality rates at 30- and 90- and 360-days were similar in both groups (2% vs 6% and 8% vs 12%, and 18% vs 18%; p>0.1).

Conclusion: Cerebrolysin improved functional outcomes at 90 and 360 days,accelerated neurological recovery, and reduced complications post-MT in patients with good collateral circulation and effective recanalization.

LECTURE SUMMARY

Dr. Staszewski presented results of the CERECAP (**CE**rebrolysin **REC**analization **A**nd **P**erfusion) WIM (Wojskowy Instytut Medyczny) study, highlighting the gap between trial results of endovascular thrombectomy and less favorable real-world outcomes, where many patients remain disabled despite successful recanalization. *(Figure 6)* He argued that thrombectomy provides ideal conditions for cerebroprotection and that Cerebrolysin, with multimodal protective effects, could enhance recovery.

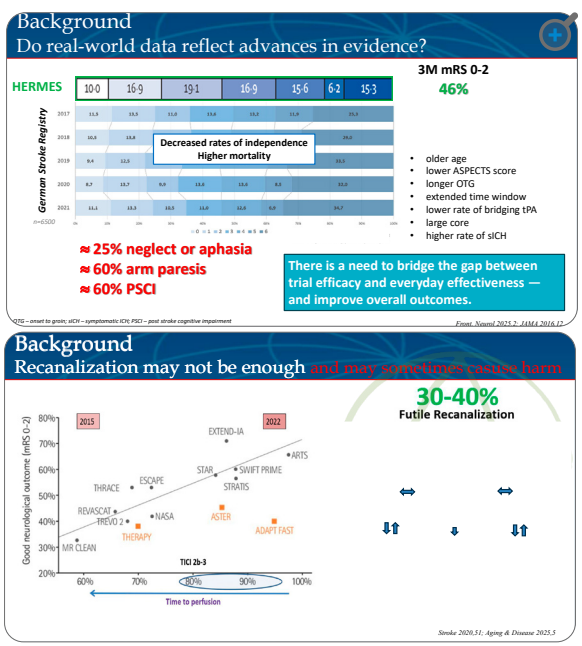


Figure 6

In his single-center prospective study, 50 thrombectomy patients received Cerebrolysin in two cycles and were compared with 50 historical controls. At three months, functional independence was achieved in 68% of the Cerebrolysin group versus 44% of controls, with better early recovery, higher discharge to home rates and fewer long-term care needs. *(Figure 7)* At 12 months, independence increased even further to 75% versus 46%, with notable benefits in diabetic patients. *(Figure 8)*

The study concluded that Cerebrolysin is a safe and effective adjunct therapy to thrombectomy, improving functional outcomes and reducing complications.

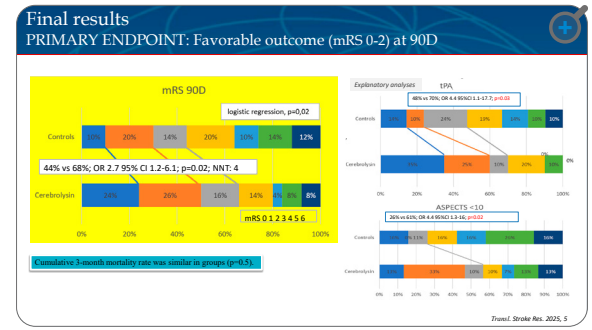


Figure 7

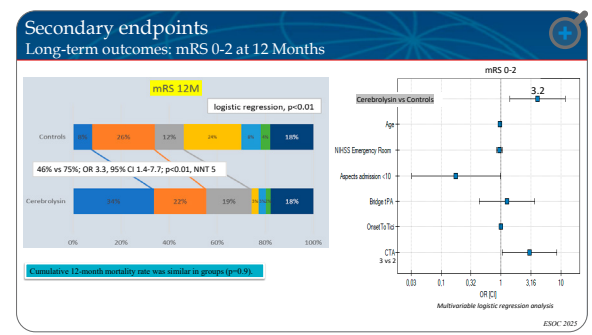
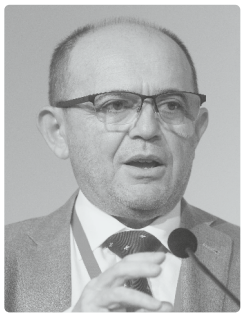


Figure 8

WATCH THE WHOLE SESSION NOW!

webinar.everpharma.com/immm2025-staszewski/



Dafin Muresanu

Chairman Department of Neurosciences,
University of Medicine and Pharmacy 'Iuliu Hatieganu',
Cluj-Napoca, Romania

Speech therapy combined with a cerebroprotective agent enhances aphasia recovery after AIS: Results from the ESCAS study

ABSTRACT

Background: Post stroke aphasia remains a leading cause of long term disability despite speech and language therapy (SLT). We evaluated whether adding Cerebrolysin to intensive SLT improves language outcomes in nonfluent post stroke aphasia.

Methods: ESCAS was a prospective, randomized, double blind, placebo controlled, two center study in Romania. Right handed adults with first ever left middle cerebral artery ischemic stroke and nonfluent aphasia were enrolled 3–5 days post stroke. Patients received IV Cerebrolysin 30 mL/day or placebo for 10 days per cycle across three cycles (days 1–14, 29–42, and 57–70), each combined with 1 hour/day SLT (total 30 hours). Assessments occurred at baseline and days 30, 60, and 90. The primary endpoint was change in Western Aphasia Battery–Aphasia Quotient (WAB AQ) from baseline; secondary endpoints included NIH Stroke Scale (NIHSS), modified Rankin Scale (mRS), and Barthel Index (BI). Trial registration: ISRCTN54581790.

Results: Of 132 enrolled patients, 123 were included in the Intention-To-Treat (ITT) and 120 in the Per Protocol (PP) analysis. At day 90, Cerebrolysin produced significantly greater WAB AQ gains than placebo (mean change +35.6 ± 16.3 vs +20.8 ± 12.5 points; between group difference +14.8 points, 95% CI 9.5–20.1; P<0.001). NIHSS improvement was larger with Cerebrolysin (between group difference –2.09 points, 95% CI –3.09 to –1.08; P<0.001). mRS recorded an improved functional outcome for Cerebrolysin.

Conclusions: In patients with early nonfluent aphasia after left MCA stroke, adjunctive Cerebrolysin plus intensive SLT yielded significantly greater language recovery and larger reductions in neurological deficit than SLT alone, with supportive signals in functional measures and acceptable safety. Confirmation in larger, multicenter trials is needed.

LECTURE SUMMARY

Prof. Muresanu explained that Cerebrolysin is a biological multimodal drug composed of neuropeptides and amino acids that mimic natural neurotrophic factors. Unlike single-target chemical agents, Cerebrolysin acts pleiotropically, supporting both neuroprotection and neuroregeneration. *(Figure 9, 10)* This dual action mirrors the brain's natural recovery sequence: protecting neurons first, then stimulating repair and reorganization.

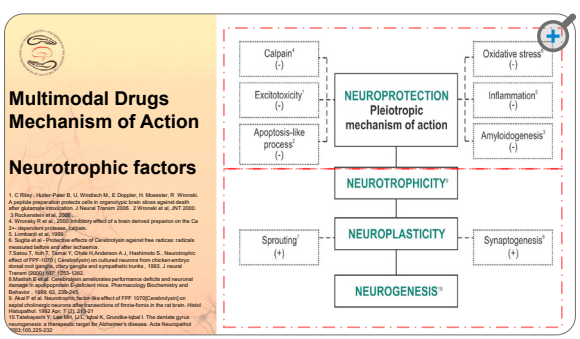


Figure 9

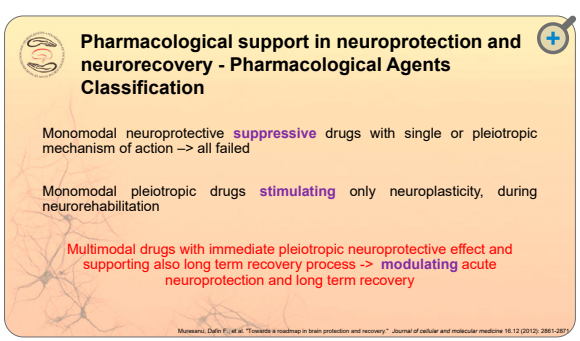


Figure 10

Prof. Muresanu presented findings from the randomized, double-blind ESCAS (The Efficacy and Safety of Cerebrolysin in the Treatment of Aphasia After Acute Ischemic Stroke) study involving 132 stroke patients with nonfluent aphasia. Participants received either Cerebrolysin (30 ml daily for 10 days in three cycles) plus speech therapy, or placebo plus therapy. *(Figure 11)*

Results demonstrated significantly greater improvements in language (Western Aphasia Battery) *(Figure 12, 13)*, neurological function (NIHSS - National Institutes of Health Stroke Scale) and activities of daily living (Barthel Index) in the Cerebrolysin group, particularly by day 90. The treatment was well tolerated, with no safety concerns reported.

He concluded that combining Cerebrolysin with early, targeted rehabilitation optimizes neuroplasticity and leads to superior recovery

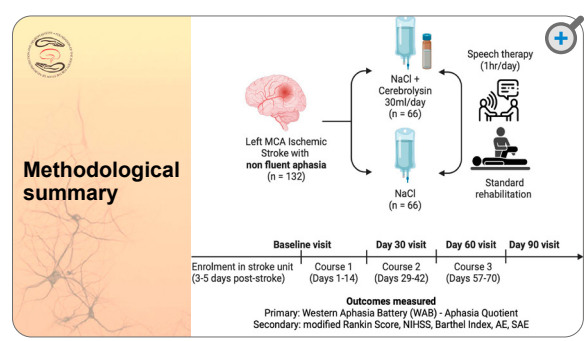


Figure 11

compared to rehabilitation alone. This approach aligns with European Academy of Neurology (EAN) recommendations supporting Cerebrolysin as an adjunct therapy for moderate-to-severe stroke.

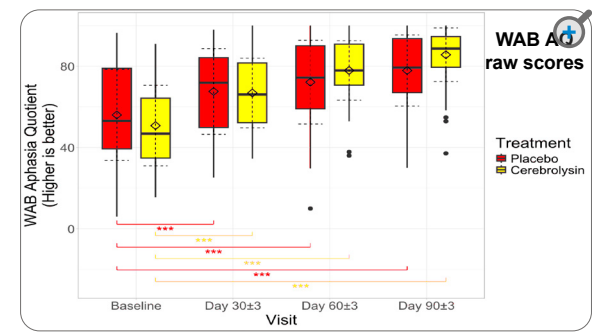


Figure 12

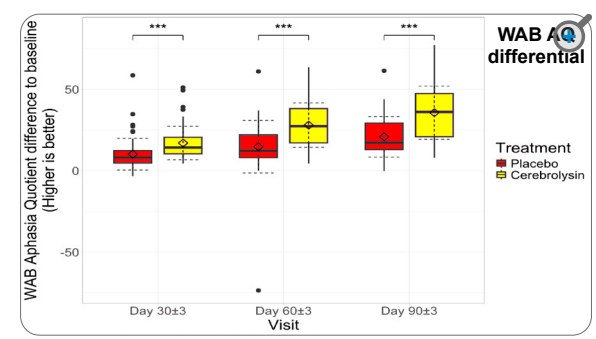


Figure 13

WATCH THE WHOLE SESSION NOW!
webinar.everpharma.com/immm2025-muresanu/

Paschenelle Celis

MD, DBPRM, FPARM, Metro North Medical Center And Hospital Inc.,
1001 Mindanao Ave Ext, Brgy, Quezon City, 1106 Metro Manila, Philippines

Session 2 – Advances in brain trauma treatment strategies
Introduction

Dr. Celis emphasized that traumatic brain injury (TBI) is a major global health issue, affecting 70 million people worldwide, with 10% of cases being moderate and about 10% severe. She noted that TBI causes long-term disability, rehabilitation needs and care inequities and that each case is highly heterogeneous, shaped by injury mechanism, brain regions affected, demographics and psychosocial factors.

She highlighted the CAPTAIN study, which evaluated Cerebrolysin in TBI patients using multiple functional, neuropsychological and neurocognitive measures. The study showed that Cerebrolysin is safe and improves recovery, especially in moderate and severe cases, accelerating functional improvements within 10 to 30 days.

Dr. Celis also mentioned that cognitive impairment and depression are common post-TBI, affecting rehabilitation outcomes and that early management and patient motivation are critical for successful recovery. *(Figure 14)* She concluded that adding cerebroprotective agents like Cerebrolysin can enhance both recovery and quality of life for TBI patients.

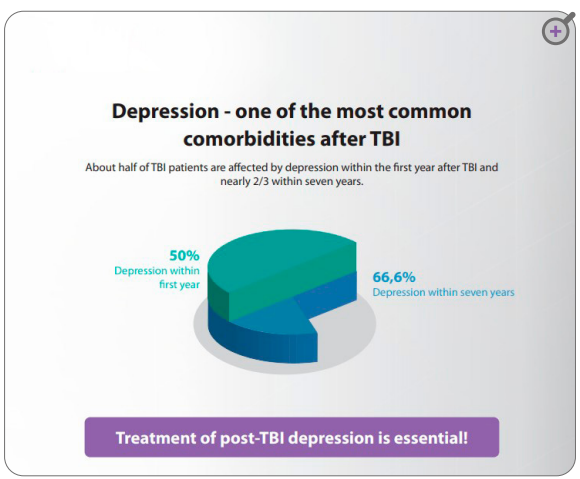


Figure 14

WATCH THE WHOLE SESSION NOW!
webinar.everpharma.com/immm2025-celis/

Sindi Mitrovic

MD, PhD, PM&R Specialist, Clinic for rehabilitation "Dr Miroslav Zotović" Belgrade,
Facutly of Medicine University of Belgrade, Serbia, Sokobanjska 13, Belgrade, Serbia

TBI-consequences – Updates on essential guideline recommendations in neurorehabilitation

ABSTRACT

Rehabilitation following traumatic brain injury (TBI) is a complex, dynamic, and prolonged process requiring a highly specialized, individualized, and multidisciplinary approach. The clinical consequences of TBI are heterogeneous and include motor deficits, cognitive impairments (attention, memory, executive functions), emotional disturbances (depression, anxiety, affective lability), and behavioral disorders (impulsivity, aggression, disinhibition), all significantly affecting rehabilitation outcomes. Additionally, more than two-thirds of TBI patients have concomitant orthopedic, visceral, or neurological injuries, further complicating treatment and rehabilitation planning.

Therapeutic planning must be adapted to the severity and nature of neurological, cognitive, and behavioral impairments, as well as the patient's evolving needs throughout recovery. Contemporary clinical guidelines emphasize early rehabilitation onset, high-intensity therapy, clearly defined short- and long-term goals, and continuous monitoring through standardized outcome measures. Moreover, patients discharged from inpatient rehabilitation should have timely access to community-based follow-up services aligned with their individual needs and recovery potential.

The modern neurorehabilitation framework is grounded in principles of neuroplasticity and task-oriented training. Implementing neurorehabilitation interventions can stimulate specific sensorimotor and cognitive neuronal circuits, tailored to the level of injury and degree of disability.

Effective TBI rehabilitation is guided by updated clinical guidelines emphasizing continuity of care, interprofessional coordination, and the use of standardized outcome measures. These approaches aim not only to restore functional independence but also to enhance quality of life and long-term social participation.

Despite the complexity and variability of TBI, advances in neurorehabilitation and the implementation of evidence-based practices significantly improve functional outcomes and reduce long-term disability.

LECTURE SUMMARY

Dr. Mitrovic opened her presentation by stating that TBI is a significant global health problem, resulting in heterogeneous clinical consequences, including physical deficits, cognitive impairments, emotional disturbances and behavioral disorders, which significantly impact rehabilitation outcomes. *(Figure 15)*

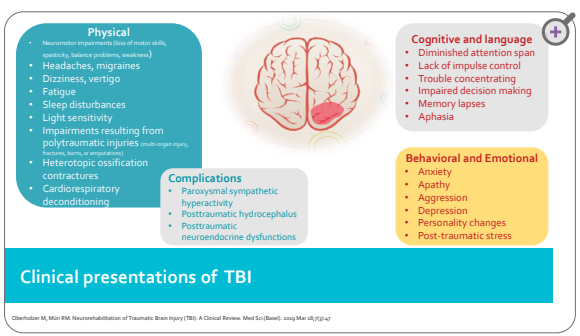


Figure 15

She noted that optimal TBI care requires a multidisciplinary, structured and flexible approach, addressing medical complications, motor recovery, cognitive reeducation, speech therapy and psychological support. Early and intensive rehabilitation, beginning within 35 days post-injury, improves functional and cognitive outcomes, reduces hospital stays and accelerates patient independence. She underscored that therapy intensity, patient goal setting and family involvement are critical for recovery and social reintegration. *(Figure 16)*

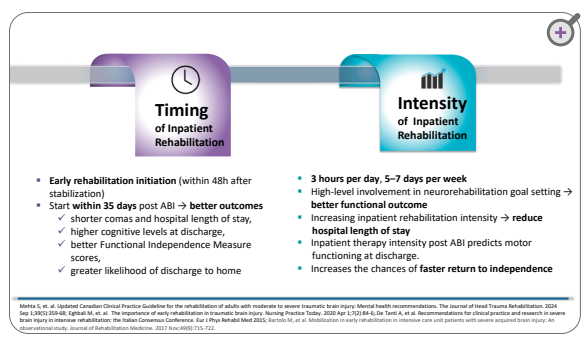


Figure 16

Dr. Mitrovic also described that pharmacological support with Cerebrolysin has been shown to prevent secondary injury cascades and enhance neurorecovery, cognitive performance and functional outcomes in moderate to severe TBI. *(Figure 17)* She stressed that effective rehabilitation relies on evidence-based guidelines, individualized interventions, interprofessional collaboration and multimodal approaches to optimize long-term function, quality of life and societal participation.

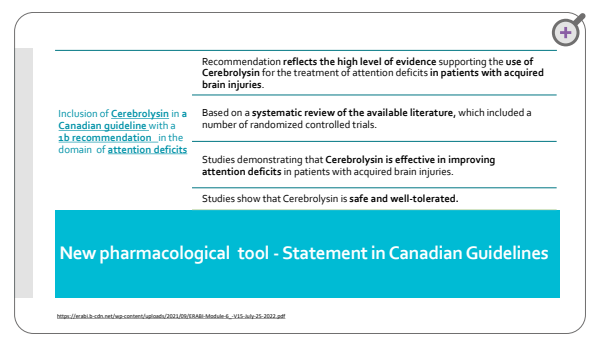


Figure 17

WATCH THE WHOLE SESSION NOW!
webinar.everpharma.com/immm2025-mitrovic/

Philip Li

Neurosurgeon, Far Eastern Memorial Hospital,
No. 21, Section 2, Nanya S. Road,
Banqiao District, New Taipei City, 220, Taiwan

Clinical benefits of Cerebrolysin treatment in the real world – remarkable recovery after TBI

ABSTRACT

Traumatic brain injury (TBI) continues to represent a global health burden, often leading to long-term disability and limited recovery. Despite advances in acute management, effective pharmacological strategies to support neurorecovery remain scarce. Cerebrolysin, a multimodal neuropeptide therapy, offers a unique approach by combining neuroprotection with stimulation of neuroplasticity and functional regeneration. Clinical evidence from large prospective studies has shown that Cerebrolysin can accelerate neurological recovery, enhance cognitive and functional outcomes, and improve emotional well-being after moderate to severe TBI. These benefits translate into meaningful improvements for patients and families in real-world settings, where rehabilitation potential is often constrained. Importantly, treatment has been proven safe and well-tolerated, making it a viable option for integration into standard neurorehabilitation protocols. This presentation will highlight the clinical relevance of Cerebrolysin in everyday practice, emphasizing its role in bridging the gap between acute care and long-term recovery, and its potential to change the trajectory of recovery after TBI.

LECTURE SUMMARY

Dr. Li focused his presentation on clinical benefits of Cerebrolysin for TBI patients in real-world practice. Traditional treatments, including prior neuroprotective agents like progesterone, have largely failed. Therefore, he highlighted the need for interventions, bridging acute care and long-term recovery.

He explained that TBI causes both primary injuries (e.g., hemorrhage, diffuse axonal injury) and secondary injuries, including oxidative stress, excitotoxicity, neuroinflammation, apoptosis, and long-term complications like hydrocephalus and chronic traumatic encephalopathy. While moderate neuroinflammation supports repair, excessive inflammation worsens outcomes, emphasizing the importance of restoring homeostasis.

Dr. Li presented two cases demonstrating substantial recovery after Cerebrolysin treatment combined with rehabilitation, illustrating improvements in independence and return to work.

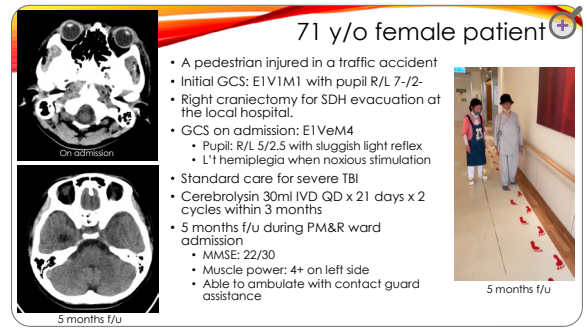


Figure 18

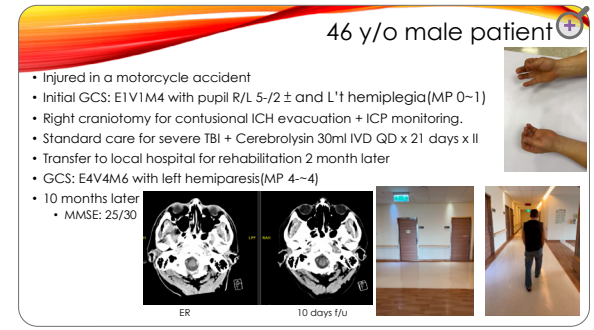


Figure 19

Case 1

A 71-year-old female pedestrian injured by a motorcycle, with an initial GCS 3 (E1V1M1) and a dilated right pupil. After right craniectomy and two cycles of Cerebrolysin (30 ml/day for 21 days each), she showed substantial functional recovery five months post-injury, with reduced care burden for her family despite some residual cognitive deficits. *(Figure 18)*

Case 2

A 46-year-old male motorcycle accident patient, initial GCS 6 (E1V1M4), right pupil dilation, treated with right craniotomy and two cycles of Cerebrolysin. 10 months later, he had returned to work as a chef with good hand function, although mild personality changes were reported by his family. *(Figure 19)*

In conclusion, TBI imposes a significant socioeconomic burden, and Cerebrolysin offers a multi-target strategy bridging acute lifesaving interventions and long-term recovery. Clinical results show positive effects on early recovery, functional and cognitive outcomes, mortality, and depression in moderate-to-severe TBI patients. Retrospective data collection is ongoing, but current results indicate a reduction in mortality of approximately 50%, consistent with CAPTAIN trial findings. Improvements in GCS scores were also observed.

WATCH THE WHOLE SESSION NOW!
webinar.everpharma.com/immm2025-li/

Adel Mohamad Alansary

MD, Prof. Anesthesiology and Critical Care,
Faculty of Medicine Ain Shams University,
Abbasia-Cairo

Clinical benefits of Cerebrolysin treatment in the real world – recovery after delirium

ABSTRACT

Delirium in critically ill patients is associated with significant long-term cognitive impairment and is considered to be a marker of worse prognosis. The potential for Cerebrolysin to accelerate consciousness recovery in sepsis-associated encephalopathy suggests it may have broader applications in delirium recovery.

The current evidence suggests Cerebrolysin may be beneficial for delirium recovery, particularly in sepsis related cases. In our ongoing study we aim to evaluate the efficacy of Cerebrolysin in treating delirium in critically ill patients admitted to the intensive care unit.

We proposed the anticipated following clinical benefits:

- Reduced Delirium Severity and Duration:
  Cerebrolysin has been shown to reduce the severity and duration of delirium, as measured by tests like the Confusion Assessment Method (CAM).
- Improved Cognitive Function:
  Patients treated with Cerebrolysin have shown improvements in cognitive functions like memory, concentration, and overall cognitive status, particularly in the context of traumatic brain injury.
- Shorter Hospital Stays:
  Studies have indicated that Cerebrolysin can lead to a reduction in the length of hospital stay, potentially due to a faster recovery from delirium and its associated complications.

We are still in the patient recruitment phase of our study and the first look at the numbers is encouraging.

LECTURE SUMMARY

Dr. Alansary discussed delirium in ICU patients, a common complication associated with increased mortality. He highlighted the potentialyl protective role of Cerebrolysin in reducing BBB breakdown and inflammation.

CASE SUMMARY

A 70-year-old male with advanced COPD, hypertension, diabetes, ischemic heart disease and a history of smoking was admitted with respiratory failure and altered mental status. He exhibited hypoxia, hypercapnia and signs of multiorgan dysfunction. Imaging confirmed severe COPD with right-sided consolidation. Blood cultures later revealed Streptococcus pneumoniae. *(Figure 20, 21)*

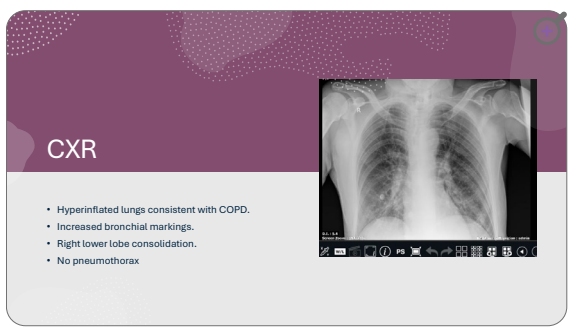


Figure 20

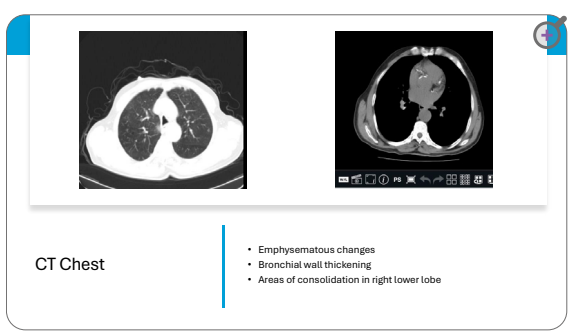


Figure 21

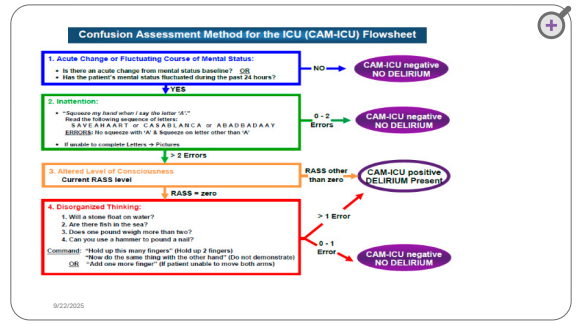


Figure 22

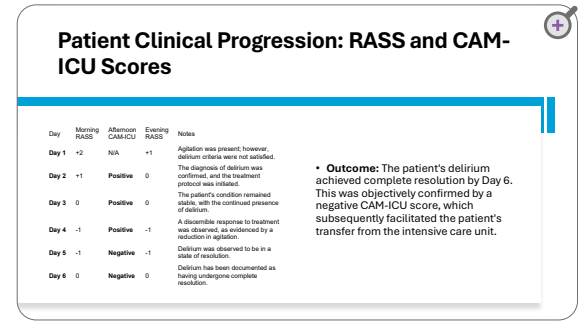


Figure 23

Management: The patient received non-invasive ventilation, beta-lactam antibiotics, bronchodilators, steroids and supportive care. Delirium risk factors included age, hypoxia, infection and ICU environment. CAM-ICU scores were used to monitor delirium, with environmental modifications, early mobilization, minimal sedation and low-dose olanzapine implemented. *(Figure 22)*

Cerebrolysin Administration and Outcome: Cerebrolysin (30 ml in 500 ml over 2–3 hours) was administered. The patient showed gradual improvement in respiratory function and delirium, with CAM-ICU scores negative by day six. Functional recovery was significantly faster compared with ICU patients not receiving Cerebrolysin. *(Figure 23)*

Conclusion: Dr. Alansary concluded that delirium is a significant ICU challenge and that Cerebrolysin may serve as a useful adjuvant therapy to accelerate recovery. Further studies are planned to confirm efficacy in larger patient cohorts.

WATCH THE WHOLE SESSION NOW!
webinar.everpharma.com/immm2025-alansary/

Moderators:
Dafin Muresanu (RO), Michael Brainin (AT)

Experts:
Daniel Šaňák (CZ), Paschenelle Celis (PH), Paola Marangolo (IT), Philip Li (TW)

Expert Panel Discussion – The brain wants more: Is Cerebrolysin delivering on Its promise?

ABSTRACT

In the last 10 years, Cerebrolysin's clinical development has seen many positive results and transformed the agent into one of the few evidence-based pharmacological options in neurorehabilitation, being recommended in international guidelines for post-stroke motor recovery and for attention deficits after traumatic brain injury. Beyond these undisputed indications, it has long been discussed as a cerebroprotective and cerebrorestorative agent with potential to enhance outcomes in additional post-stroke complications and in a wider range of neurotrauma-related indications. In this panel discussion, leading experts in stroke and TBI will examine how far Cerebrolysin has come in delivering on these promises, where the evidence unequivocally supports its use, and which areas of research and clinical practice still hold untapped potential for the future.

LECTURE SUMMARY

The expert panel discussed the current use of Cerebrolysin in stroke and neurorehabilitation, focusing on whether it is delivering on its clinical promise. Experts highlighted positive clinical outcomes, growing guideline support and real-world evidence. The importance of combining Cerebrolysin with intensive, multidisciplinary rehabilitation was emphasized. Future directions included expanding indications (e.g., multiple sclerosis relapse, spontaneous hemorrhage, spinal cord injury) and the need for broader real-world data and updated clinical guidelines.

The audience contributed actively to the discussion and asked several questions, including:

- In which indication do you think Cerebrolysin should be tested in addition to what we have already heard?
- Is there any disease or syndrome that promises to be tested with Cerebrolysin? Do you have an idea or preference?
- Is there experimental evidence for using Cerebrolysin in multiple sclerosis relapse?
- What would happen if we administer Cerebrolysin in the chronic stage (e.g., 3-month treatment cycles for chronic stroke patients)?

To gain further insight into the lively and dynamic discussion, please watch the full video.

WATCH THE WHOLE SESSION NOW!
webinar.everpharma.com/immm2025-panel-discussion/

Slaven Pikija

Univ. FA Priv.-Doz. Dr.med.
Medical University of Graz, Universitätsklinik für Department of Neurology
8036 Graz, Auenbruggerplatz 22

Session 3 – Cognition after stroke – New evidence in post-stroke cognition
Introduction

Dr. Pikija opened the session by emphasizing the monumental challenge of post-stroke cognitive impairment, which he called one of the most complex aspects of human existence – our cognition. About one-third of stroke survivors develop cognitive problems, making it a major concern for patients, families and clinicians.

He noted that current treatment options are very limited and a comprehensive solution may not be available in our lifetime. However, ongoing research aims to improve outcomes. Dr. Pikija explained that various factors – genetic, vascular, lifestyle-related and stroke location – contribute to post-stroke cognitive decline. *(Figure 24)*

He briefly referred to the toxic cascade occurring in the brain after stroke, including inflammation, blood-brain barrier disruption and neurovascular dysfunction. Dr. Pikija emphasized the clinical importance of addressing these cognitive complications and highlighted the ongoing challenge of predicting and improving outcomes for stroke patients.

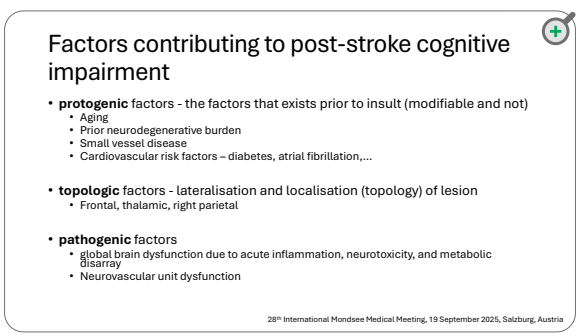


Figure 24

WATCH THE WHOLE SESSION NOW!
webinar.everpharma.com/immm2025-pikija/

Michael Brainin

Univ.-Prof. Dr. Dr. h.c. mult., Department for Clinical Neurosciences and Preventive Medicine, Danube University Krems, Dr.-Karl-Dorrek-Straße 30, 3500 Krems an der Donau, Austria

CREGS - Results of a large high-quality comparative effectiveness study

ABSTRACT

Background and Aims: The CREGS study investigated the effectiveness of Cerebrolysin in patients with moderate neurological deficits following an acute ischemic stroke in a real-world setting.

Methods: CREGS used an open-label, observational design based on the principles of High-Quality Comparative Effectiveness Research (HQCER) to measure the effects of treatment in practice. The study recorded treatment methods and other medications according to local standards, and outcomes were assessed on days 21 and 90 after the stroke. The methodology included rigorous pre-specification of analytical procedures and risk-based centralized statistical monitoring. A restricted cohort design and non-parametric multilevel stratification followed the Good Research for Comparative Effectiveness (GRACE) principles to standardize the compared patient groups and minimize enrollment bias. Specific subgroups of interest, including age, baseline NIHSS, thrombolysis, and "high-enrolling countries", were pre-specified to evaluate potential subgroup effects and generalizability.

Results: The study is notable for its robust data integrity, with an overall dropout rate of 5.7% and a valid N of 90.9% for the primary day 90 mRS evaluation with multilevel case-mix standardization. This underscores the high quality and reliability of the collected data, ensuring the validity of the findings. Top line results will be available in October.

Conclusion: Real-world studies like CREGS, based on HQCER, supplement classical designs by including larger patient numbers and offering valuable insights into treatment safety, effectiveness, and tolerability in day-to-day practice contributing to better-informed clinical decisions in acute stroke treatment and stroke rehabilitation.

LECTURE SUMMARY

Prof. Brainin presented the newly published CREGS study – a large, prospective, multinational, high-quality registry study investigating the real-world effectiveness of Cerebrolysin in patients with moderate acute ischemic stroke (NIHSS 8-15). *(Figure 25-27)*

The study, conducted across 16 countries, followed strict standards and included 1,865 patients. A registry design was chosen over a randomized controlled trial to assess effectiveness in real clinical practice which has been the "missing link" in the overall clinical development of Cerebrolysin.

The median treatment dosage and treatment duration reflects everyday practice, with patients receiving 30 ml of Cerebrolysin for 10 days. The primary endpoint was the modified Rankin Scale (mRS) score at day 90 *(Figure 28)* and the result showed that patients treated with Cerebrolysin improved their functional outcome significantly.

Also, the proportion of patients reaching functional independence (mRS 0–2) and excellent recovery (mRS 0–1) are significantly higher. Cognitive outcomes revealed particularly interesting findings. In patients who were assessed by IQCODE with pre-stroke cognitive decline, Cerebrolysin appeared to stabilize cognitive function, as shown by MoCA scores at day 90. *(Figure 29)*

CREGS-2 - A multinational, high-quality comparative effectiveness study of Cerebrolysin in moderate acute ischemic stroke

Milan R. Vosko[1], Daniel Sanak[2], Youngrok Do[3], Jarungchai S. Vatanagul[4], Tamer Roushdy[5], Natan M. Bornstein[6], Johannes C. Vester[7], Michael Brainin[8] on behalf of the CREGS Investigators

Figure 25

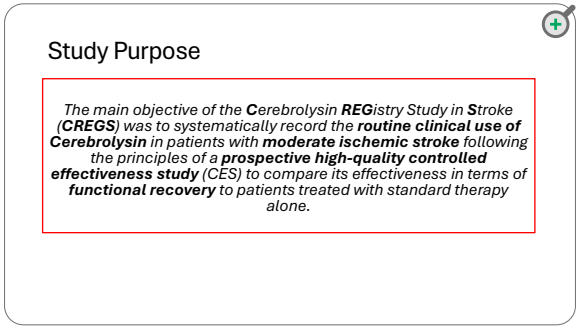


Figure 26

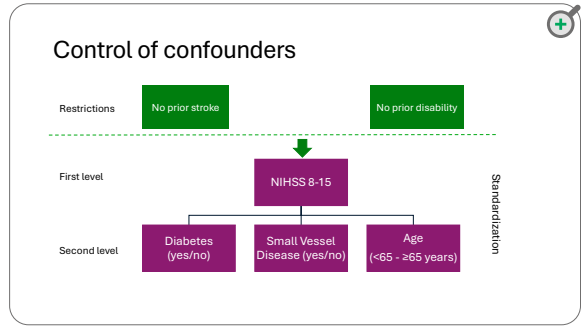


Figure 27

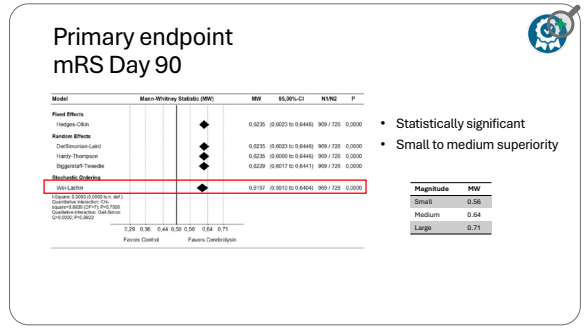


Figure 28

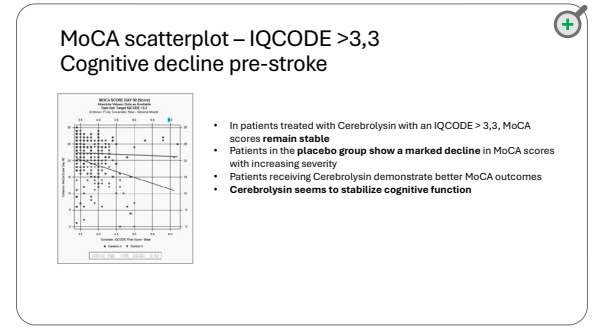


Figure 29

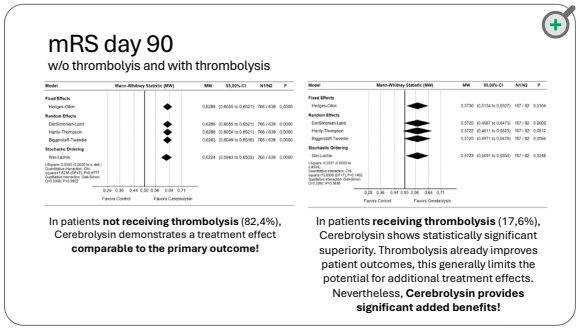


Figure 30

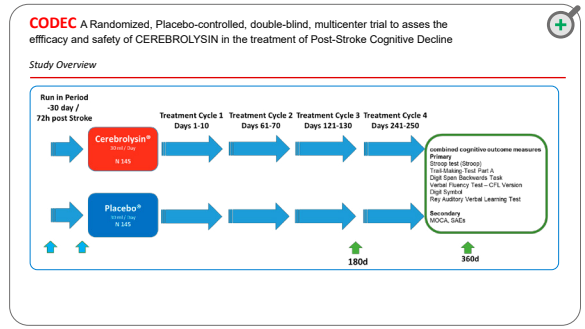


Figure 31

Further analysis shows consistent benefits across both thrombolysis and non-thrombolysis subgroups, suggesting potential additive effects when combined with thrombolytic therapy. *(Figure 30)* Importantly, Cerebrolysin is well tolerated, with no increase in serious adverse events or deaths compared to controls.

Prof. Brainin summarised that the CREGS study demonstrates that Cerebrolysin is effective in real-world practice across multiple countries. It supports early and sustained functional recovery.

Finally, the ongoing CODEC-study is currently investigating Cerebrolysin's effects on post-stroke cognitive decline using four treatment cycles and an extensive neuropsychological assessment battery. Prof. Brainin and the other investigators expect the results towards the end of next year and they are curious to see if CODEC further confirms the promising findings from CREGS. *(Figure 31)*

WATCH THE WHOLE SESSION NOW!

webinar.everpharma.com/immm2025-brainin/

Manuel Martínez-Marino

MD, MSc, Neurology Department, Hospital Universitario de la UAdeC, Saltillo, Coahuíla,
Calz Francisco I. Madero 1291, Zona Centro, 25160 Saltillo, Coahuila, México

Cerebrolysin and post stroke cognitive decline – Results from a Mexican retrospective cohort

ABSTRACT

Post-stroke cognitive impairment is a short- and medium-term consequence of stroke that causes disability and dependency with a strong association with the impairment of cerebrovascular reactivity (CVR) and other comorbidities (depression, recurrence, etc.).

The conference describes the stroke care protocol in a lecture hospital in Mexico, which recurrently includes the use of Cerebrolysin in the regularly phase. Additionally, the preliminary report of a multicenter cohort study is attached, focused on vascular cognitive impairment as a primary outcome after stroke with CVR measurement by TCD.

However, since a group of patients (n = 31) received treatment with Cerebrolysin in the post-stroke phase, a secondary analysis of this subgroup of patients was performed compared to the group that did not use Cerebrolysin and we described the benefit of the Cerebrolysin use: improvement of the CVR (OR 1.63 [CI95% 0.6 – 4.45] BHI >0.5) at 3 months, post Stroke depression (PDS) (OR 0.72 [CI95% 0.28 - 1.43]) at 12 months, association with less disability and dependence after Stroke (OR 1.46 [CI95% 0.44-4.9] mRS ≤2, and OR 1.6 [CI95%0.42-6.2] Barthel Index >85 % at 12 months, respectively).

Conclusion: Cerebrolysin may have a beneficial effect on the recovery phase after a stroke, and further controlled clinical trials with well-defined outcome measures are needed to establish a direct association between its use and stroke benefit on post-stroke complications and functional outcome.

LECTURE SUMMARY

Dr. Martínez presented a study from Mexico addressing acute stroke care and post-stroke cognitive impairment (PSCI) which is one of the most prevalent global post-stroke complications(est. around 50%). Only about 3% of patients with acute ischemic stroke receive reperfusion therapy, with high mortality rates and functional impairment among survivors. Rehabilitation availability is limited, creating a growing burden of long-term disability and cognitive decline. *(Figure 32, 33)*

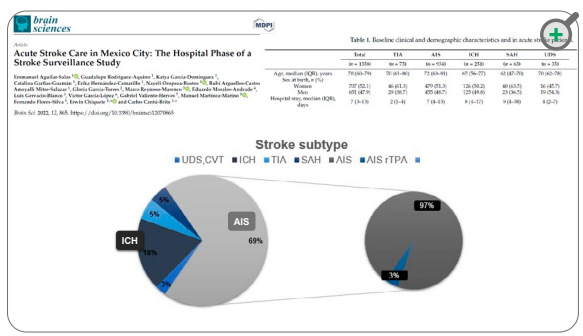


Figure 32

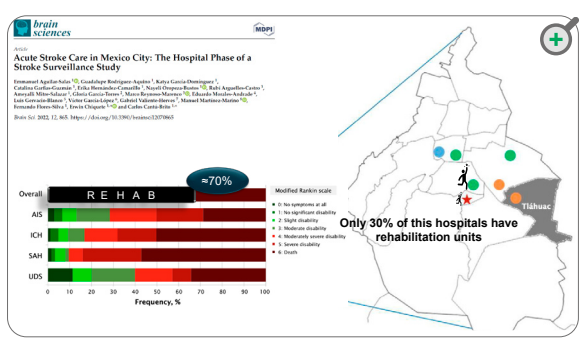


Figure 33

To predict post-stroke cognitive outcomes, the treating physicians used transcranial Doppler to measure cerebrovascular reactivity via the breath-holding index. Patients with impaired reactivity early after stroke were more likely to develop cognitive impairment over 12 months. About 50% of the study population experienced post-stroke cognitive decline. A sub-analysis of patients treated with Cerebrolysin showed a trend toward cognitive preservation, similar to the findings in the CREGS study. The treated group demonstrated better MoCA scores over time. *(Figure 34)*

Dr. Martínez concluded that combining neurorestorative treatments like Cerebrolysin with non-pharmacological care may improve long-term outcomes, reduce disability and preserve cognitive function.

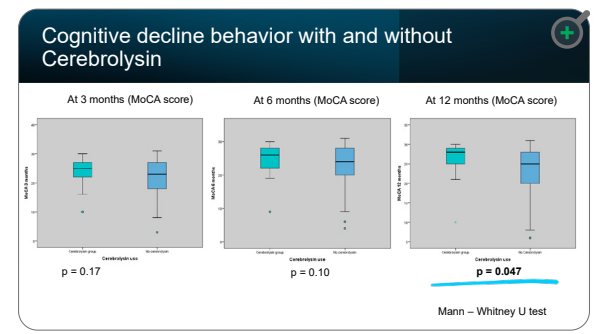


Figure 34

WATCH THE WHOLE SESSION NOW!
webinar.everpharma.com/immm2025-martinez/

Sigrid Schwarz

Dr, Universitätsklinikum Tulln,
A-3430 Tulln, Alter Ziegelweg10, Austria

Post-stroke cognitive assessments – Essentials for the acute and subacute phase

ABSTRACT

30% to 60% of stroke survivors experience some form of cognitive impairment. These impairments can affect memory, attention, executive function, language, and visuospatial abilities and emotionality. Cognitive problems persist long-term, with 20 to 50% of patients showing impairment even several years later. Cognitive deficits post-stroke even in mild strokes reduce rehabilitation prognosis, social and economic participation and life quality significantly.

Rehabilitation can yield meaningful improvements, especially in the first 6 months when supporting the spontaneous remission, domain-specific recovery (e.g., memory, language) may vary.

Importance of post-stroke cognitive assessment: together with communication, bimanual hand function and independant walking, the cognitive status is a central topic in the acute stroke rehabilitation. Early assessment at the stroke care unit and early start of rehabilitation are positive prognostic factors for longterm cognitive outcome.

For a comprehensive neuropsychological assessment, sophisticated computerized test systems have been developed based on neuroscientific theories of cognitive function. If the infrastructure does not allow for the application of comprehensive computerized test systems, and clinical neuropsychologists are not available, the assessment methods have to be adapted to clinical observation and paper-pencil-tests.

Early rehabilitative assessment at the stroke unit and early start of rehabilitation are positive prognostic factors for longterm cognitive outcome. They improve self-efficacy, and quality of life post stroke.

LECTURE SUMMARY

Dr. Schwarz emphasized recognizing and addressing cognitive symptoms after stroke, describing them as the most invisible yet impactful impairments. Cognitive outcomes are shaped early, often within the first days and influence long-term recovery and daily independence.

She highlighted that cognitive assessment and rehabilitation must be interdisciplinary and continuous, involving doctors, therapists, patients and caregivers. Early evaluation should cover memory, attention, communication, behavior and emotional state. Challenges such as delirium, depression, medication effects, sensory impairments and pre-existing cognitive decline must be identified before targeted therapy. *(Figures 35-37)*

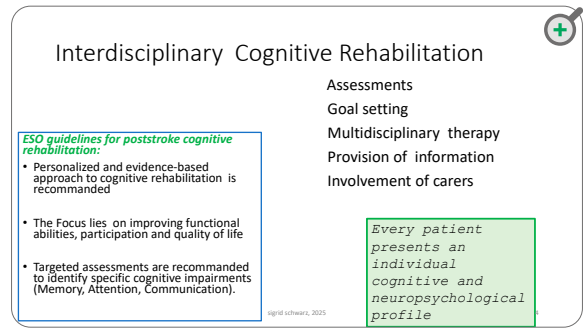


Figure 35

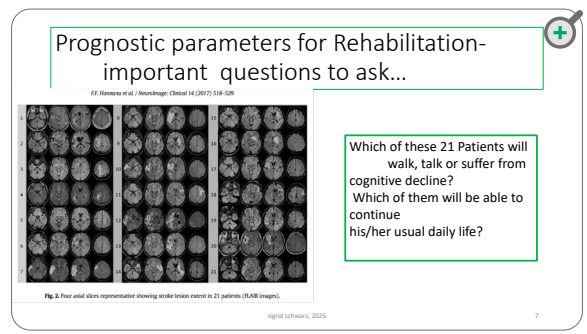


Figure 36

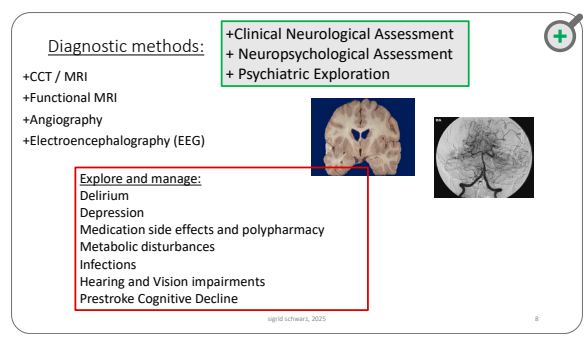


Figure 37

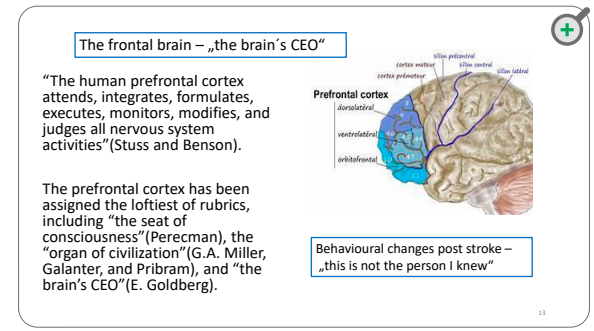


Figure 38

Special attention should be given to frontal lobe functions, which determine whether patients can return to work, family life and social roles. Simple bedside tools can assess executive function. *(Figure 38)*

Dr. Schwarz concluded that cognition is as important as mobility and speech and early neuroplasticity enhancement combined with interdisciplinary rehabilitation can significantly improve long-term outcomes.

WATCH THE WHOLE SESSION NOW!
webinar.everpharma.com/immm2025-schwarz/

ABBREVIATED PRESCRIBING INFORMATION. Name of the medicinal product: Cerebrolysin - Solution for injection. Qualitative and quantitative composition: One ml contains 215.2 mg of Cerebrolysin concentrate in aqueous solution. List of excipients: Sodium hydroxide and water for injection. Therapeutic indications: For treatment of cerebrovascular disorders. Especially in the following indications: Senile dementia of Alzheimer's type. Vascular dementia. Stroke. Craniocerebral trauma (commotio and contusio). Contraindications: Hypersensitivity to one of the components of the drug, epilepsy, severe renal impairment. Marketing Authorisation Holder: EVER Neuro Pharma GmbH, A-4866 Unterach. Only available on prescription and in pharmacies. More information about pharmaceutical form, posology and method of administration, special warnings and precautions for use, interaction with other medicinal products and other forms of interaction, fertility, pregnancy and lactation, effects on ability to drive and use machines, undesirable effects, overdose, pharmacodynamics properties, pharmacokinetic properties, preclinical safety data, incompatibilities, shelf life, special precautions for storage, nature and contents of the container and special precautions for disposal is available in the summary of product characteristics.

EVER Neuro Pharma GmbH
Oberburgau 3
4866 Unterach
Austria
www.everpharma.com

www.cerebrolysin.com

CERE/INT/11/2025/28