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Stroke

Current Awareness Bulletin

November 2024

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1. **Beyond wrecking a wall: revisiting the concept of blood-brain barrier breakdown in ischemic stroke**

Authors: Castillo-González, Julia and González-Rey, Elena

Publication Date: 2025

Journal: Neural Regeneration Research

Abstract: The blood-brain barrier constitutes a dynamic and interactive boundary separating the central nervous system and the peripheral circulation. It tightly modulates the ion transport and nutrient influx, while restricting the entry of harmful factors, and selectively limiting the migration of immune cells, thereby maintaining brain homeostasis. Despite the well-established association between blood-brain barrier disruption and most neurodegenerative/neuroinflammatory diseases, much remains unknown about the factors influencing its physiology and the mechanisms underlying its breakdown. Moreover, the role of blood-brain barrier breakdown in the translational failure underlying therapies for brain disorders is just starting to be understood. This review aims to revisit this concept of "blood-brain barrier breakdown," delving into the most controversial aspects, prevalent challenges, and knowledge gaps concerning the lack of blood-brain barrier integrity. By moving beyond the oversimplistic dichotomy of an "open"/"bad" or a "closed"/"good" barrier, our objective is to provide a more comprehensive insight into blood-brain barrier dynamics, to identify novel targets and/or therapeutic approaches aimed at mitigating blood-brain barrier dysfunction. Furthermore, in this review, we advocate for considering the diverse time- and location-dependent alterations in the blood-brain barrier, which go beyond tight-junction disruption or brain endothelial cell breakdown, illustrated through the dynamics of ischemic stroke as a case study. Through this exploration, we seek to underscore the complexity of blood-brain barrier dysfunction and its implications for the pathogenesis and therapy of brain diseases. (Copyright © 2025 Copyright: © 2025 Neural Regeneration Research.)

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2. **The potential mechanism and clinical application value of remote ischemic conditioning in stroke**

Authors: Zhu, Yajun;Li, Xiaoguo;Lei, Xingwei;Tang, Liuyang;Wen, Daochen;Zeng, Bo;Zhang, Xiaofeng;Huang, Zichao and Guo, Zongduo

Publication Date: 2025

Journal: Neural Regeneration Research

Abstract: Some studies have confirmed the neuroprotective effect of remote ischemic conditioning against stroke. Although numerous animal researches have shown that the neuroprotective effect of remote ischemic conditioning may be related to neuroinflammation, cellular immunity, apoptosis, and autophagy, the exact underlying molecular mechanisms are unclear. This review summarizes the current status of different types of remote ischemic conditioning methods in animal and clinical studies and analyzes their commonalities and differences in neuroprotective mechanisms and signaling pathways. Remote ischemic conditioning has emerged as a potential therapeutic approach for improving stroke-induced

brain injury owing to its simplicity, non-invasiveness, safety, and patient tolerability. Different forms of remote ischemic conditioning exhibit distinct intervention patterns, timing, and application range. Mechanistically, remote ischemic conditioning can exert neuroprotective effects by activating the Notch1/phosphatidylinositol 3-kinase/Akt signaling pathway, improving cerebral perfusion, suppressing neuroinflammation, inhibiting cell apoptosis, activating autophagy, and promoting neural regeneration. While remote ischemic conditioning has shown potential in improving stroke outcomes, its full clinical translation has not yet been achieved.

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3. **Effect of stroke etiology on treatment-related outcomes in young adults with large vessel occlusion: Results from a retrospective cohort study**

Authors: Bhayana, Kriti;Handshoe, J. W.;Li, Yadi;Thompson, Nicolas R.;Kharal, Maariyah;Saleem, Hiba;Saleem, Ehaab;Schuster, Andrew T.;Coors, Benjamin;Martucci, Maria;Hussain, M. S. and Kharal, G. A.

Publication Date: 2024

Journal: Journal of Stroke & Cerebrovascular Diseases 33(12), pp. N.PAG

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4. **Association between patient-reported frailty and nonhome discharge among older patients with acute stroke: A prospective study**

Authors: Cui, Yanli;Meng, Cao;Xiang, Lijun;Luo, Yansi;Song, Xuemei;Cheng, Daihong;Ye, Jiawei and Zhang, Xiaomei

Publication Date: 2024

Journal: Clinical Rehabilitation 38(12), pp. 1691–1702

Abstract: Objective: To investigate the association between prestroke frailty and nonhome discharge, prolonged length of stay as well as functional outcomes. Design: Prospective observational study. Setting: Single urban teaching hospital in Guangzhou, China. Participants: Consecutive sample of 271 older patients admitted with acute stroke. Intervention: N/A. Main measures: A five-item FRAIL scale (0∼5 points) and the stroke severity at onset were measured. The primary outcome of interest was nonhome discharge, with secondary outcomes including prolonged length of stay and worse short-term prognosis. Multivariable logistic regression adjusting for confounding factors was used to determine the association between patient-reported frailty and nonhome discharge, prolonged length of stay, worse short-term prognosis. Results: The population had a median age of 68 interquartile range (IQR), 64∼74)]years, with 50 individuals (18.5%) identified as frail. After adjusting for age, sex, Barthel index, National Institutes of Health Stroke Scale, and Mini-Mental Status Exam score at admission, patients with self-reported frailty were significantly likely to experience nonhome discharge (Odds Ratio OR] = 4.788; 95% confidence interval CI] = 1.272∼18.017; p =.021), prolonged length of stay (OR = 4.76; 95% CI = 1.80∼12.56; p =.002), mRS scores at 30 days (OR = 6.72;95% CI = 1.79∼25.20; p =.005) and three months

postdischarge and three-month (OR = 8.94; 95% CI = 2.10~38.08; p =.003). Conclusions: In older adults with stroke, frailty is associated with nonhome discharge, prolonged length of stay, and worse short-term prognosis, regardless of the stroke severity, cognition, and Barthel index score at admission. FRAIL scale can be used as a practical screening tool in acute care setting by multidisciplinary team in supporting discharge process.

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5. **Prevalence of posttraumatic stress disorder after stroke: A systematic literature review**

Authors: Janssen, E. P. J.;Spauwen, P. J. J.;Bus, B. A. A.;Rijnen, S. J. M. and Ponds, R. W. H. M.

Publication Date: 2024

Journal: Journal of Psychosomatic Research 187, pp. N.PAG

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6. **Development of predictive model for post-stroke depression at discharge based on decision tree algorithm: A multi-center hospital-based cohort study**

Authors: Li, Guo;Miao, Jinfeng;Jing, Ping;Chen, Guohua;Mei, Junhua;Sun, Wenzhe;Lan, Yan;Zhao, Xin;Qiu, Xiuli;Cao, Ziqin;Huang, Shanshan;Zhu, Zhou and Zhu, Suiqiang

Publication Date: 2024

Journal: Journal of Psychosomatic Research 187, pp. N.PAG

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7. **Interventions to Support the Return to Work for Individuals with Stroke: A Systematic Review and Meta-analysis**

Authors: Li, Jiaxuan;Pan, Xi;Wang, Zhi;Zhong, Weiying;Yao, Lin and Xu, Lan

Publication Date: 2024

Journal: Journal of Occupational Rehabilitation 34(4), pp. 740–755

Abstract: Purpose: An increasing number of individuals with stroke are having difficulties in returning to work, having a significant impact on both individuals and society. The aims of this meta-analysis were to summarize the interventions to support the return to work (RTW) for individuals with stroke and to quantitatively evaluate the efficacy of each type of intervention. Methods: A systematic review and meta-analysis were conducted according to PRISMA guidelines. PubMed, Embase, Cochrane Library, CINAHL, and PsycINFO were searched until 26 June 2023, and the list of references of the initially included articles was also searched. Two researchers independently performed the search, screening, selection, and data extraction. The primary outcome was RTW rate (the RTW rate was defined as the proportion

of individuals who returned to work in each group (intervention and control) at the endpoint). Pooled risk ratio (RR) was estimated using a random-effects model with 95% confidence intervals (CIs). Results: A total of 13 studies representing 4,282 individuals with stroke were included in our study. Results showed that physiological interventions could improve the RTW rate of individuals with stroke (RR: 1.19, 95% CI: 1.01 to 1.42, I2 = 72%). And receiving intravenous thrombolytic therapy was beneficial in promoting the RTW in individuals with stroke. Subgroup analysis and meta-regression analysis showed that the individuals' functional status during hospitalization was the only source of heterogeneity. Psychological interventions had little or no effect on the RTW rate of individuals with stroke (RR: 1.20, 95% CI: 0.58 to 2.51, I2 = 30%). Work-related interventions had little or no effect on the RTW rate of the individuals with stroke (RR:1.36,95%CI: 0.99 to 1.88, I2 = 73%). The subgroup analysis showed that country, age, and follow-up method were the sources of heterogeneity. Conclusion: Physiological intervention promoted the RTW of individuals with stroke. But, the effect of psychological and work-related interventions in promoting the RTW of individuals with stroke was not significant. We anticipate that these findings may inform the design of future interventions. For future research, we recommend that more high-quality randomized controlled trials be conducted to further promote the RTW of individuals with stroke. Systematic Review Registration: PROSPERO Registration Number, CRD42023443668.

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8. **Looking beyond body structure and function: a scoping review of non-impairment impacts of stroke on adolescents**

Authors: Lo, Davina;Waite, Monique and Rose, Tanya A.

Publication Date: 2024

Journal: Brain Injury 38(14), pp. 1171–1184

Abstract: Background: Much of the childhood stroke literature has not distinguished impacts for adolescents from those of younger children. Research has also focused on body impairments. With adolescence being a unique period, this scoping review aimed to identify the impacts of childhood stroke on activity, participation, and quality of life for adolescents 13–18 years, and identify how these impacts were determined. Method: This review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR). Data pertaining to non-impairment impacts of childhood stroke for adolescents, participant and study characteristics, and measurement instruments were extracted. Results: Following screening, 79 articles were included, and 33 measurement instruments identified. Only 6 studies reported separate data for adolescents, identifying difficulties with daily activities, social and academic impacts, and reduced quality of life. Impacts of post-stroke communication difficulties on daily activities and schooling were also noted. Measurement instruments developed specifically for adolescents with stroke are lacking. Interpretation: The review identified limited research reporting non-impairment impacts of childhood stroke for adolescents. Further research specific to this population and the development of measurement instruments for adolescents who have experienced childhood stroke is required to support future research and clinicians working with this population.

9. **Cardiovascular disease and stroke following cancer and cancer treatment in older adults**

Authors: Muhandiramge, Jaidyn;Zalcberg, John R.;Warner, Erica T.;Polekhina, Galina;Gibbs, Peter;van Londen, G. J.;Bernstein, Wendy B.;Macrae, Finlay;Haydon, Andrew;Tie, Jeanne;Millar, Jeremy L.;Mar, Victoria J.;Gately, Lucy;Tonkin, Andrew;Ford, Leslie;Umar, Asad;Chan, Andrew T.;Woods, Robyn L. and Orchard, Suzanne G.

Publication Date: 2024

Journal: Cancer (0008543X) 130(23), pp. 4138–4148

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10. **Factors Affecting Management of Acute Ischaemic Stroke with Reference to Intravenous Thrombolysis and Its Impact on Short-term Outcome**

Authors: Ramnani, Juhi and Gadani, Zalak

Publication Date: 2024

Journal: Apollo Medicine 21(4), pp. 326–331

Abstract: Background: Stroke is a major global health concern, ranking second in terms of fatality worldwide, following ischaemic heart disease. However, few stroke patients arrive at the hospital within the optimal time for thrombolysis, and even among those who do, not all receive this therapy. Therefore, the objective of the study was to examine the factors that influence the treatment of acute ischaemic stroke (AIS), particularly with intravenous thrombolysis and to evaluate the short-term outcomes. Methods: This prospective observational study was carried out between August 2019 and August 2021 in the emergency department of a tertiary care hospital. Patients with AIS who were eligible for intravenous thrombolysis within 4.5 hours of the beginning of symptoms were included in the study. Comprehensive assessments, including history, examinations and blood investigations, were conducted. Thrombolytic treatment was administered within the specified time frame, while antiplatelets were given in other cases. Follow-up evaluations were conducted at discharge and 90 days. Results: The age distribution, comorbidities and CT-MRI findings were similar between individuals who received thrombolysis and those who did not. Among the thrombolysis group, 84% had no complications, while 8% experienced intracerebral haemorrhage and 8% had an extension of the infarction. The overall mortality rate was 13.33% for non-thrombolysis patients and 12% for thrombolysis recipients, with no statistically significant difference between the two groups. Conclusion: The results highlight the need for careful consideration when deciding to use thrombolysis for AIS cases. Additionally, they emphasise the importance of actively monitoring and effectively managing any potential treatment complications.

11. **Improved trunk muscle quality in patients with stroke increases improvements in activities of daily living**

Authors: Sato, Keisuke;Tanaka, Seiji;Masaki, Koike and Ogawa, Takahiro

Publication Date: 2024

Journal: Journal of Stroke & Cerebrovascular Diseases 33(12), pp. N.PAG

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12. **Noninvasive brain stimulation to improve motor outcomes after stroke**

Authors: Savelon, Emma C. J.;Jordan, Harry T.;Stinear, Cathy M. and Byblow, Winston D.

Publication Date: 2024

Journal: Current Opinion in Neurology 37(6), pp. 621–628

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13. **Impact of European Stroke Organisation secondary prevention guideline for ischaemic stroke / transient ischaemic attack**

Authors: Smith, Cameron;Wallis, Struan;Katsas, Georgios;Dincarslan, Ozzy;Dawson, Jesse and Cameron, Alan

Publication Date: 2024

Journal: Journal of Stroke & Cerebrovascular Diseases 33(12), pp. N.PAG

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14. **Cost-effectiveness analysis of transthoracic echocardiographic assessment in patients with ischemic stroke or TIA of undetermined cause**

Authors: van der Maten, Gerlinde;Pouwels, Xavier G. L. V.;Meijs, Matthijs F. L.;von Birgelen, Clemens;den Hertog, Heleen M. and Koffijberg, Hendrik

Publication Date: 2024

Journal: Journal of Stroke & Cerebrovascular Diseases 33(12), pp. N.PAG

15. **Effectiveness of repetitive transcranial magnetic stimulation combined with intelligent Gait-Adaptability Training in improving lower limb function and brain symmetry after subacute stroke: a preliminary study**

Authors: Zhang, Wanying;Dai, Lei;Fang, Linjie;Zhang, Huihuang;Li, Xiang;Hong, Yu;Chen, Shishi;Zhang, Yujia;Zheng, Beisi;Wu, Jianing;Cao, Manting and Chen, Jianer

Publication Date: 2024

Journal: Journal of Stroke & Cerebrovascular Diseases 33(12), pp. N.PAG