



## Reperfusion Therapy in Pediatric Ischemic Stroke: the Pediatric Thrombolysis Protocol at the Primary Center of Pediatric Stroke in Moscow

I.O. SHCHEDERKINA<sup>1</sup>, M.I. LIVSHITZ<sup>1,2</sup>, G.E. CHMUTIN<sup>1,2</sup>, Z.U. ZOKHIDOV<sup>1,2,\*</sup>,  
B.I. OLEJNIKOV<sup>1,2</sup> & MUSA G<sup>1</sup>

<sup>1</sup> Federal State Autonomous Educational Institution of Higher Education "Peoples' Friendship University of Russia", Medical Institute, Department of Nervous Diseases and Neurosurgery, Moscow;

<sup>2</sup> Morozov Children's City Clinical Hospital of the Moscow Department of Health, Center for the Treatment of Cerebrovascular Pathology in Children and Adolescents, Moscow

<sup>3</sup> Russian National Research Medical University named after N.I. Pirogova, Moscow

**SUMMARY.** In recent years, the number of diagnosed cases of arterial ischemic stroke (AIS) in children has increased significantly. According to the Center for the Treatment of Cerebrovascular Pathology in Children and Adolescents (primary center of children's stroke) at Morozov city children hospital, the incidence of vascular brain diseases in children in Moscow was 6.59/100 000 in 2015, 6.51/100 000 in 2016, 6.43/100 000 in 2017, 5.86/100,000 in 2018, 6.69/100 000 in 2019 and 10.95/100 000 in 2020. The increase in the frequency of detection of acute ischemic stroke (AIS) in children and adolescents is primarily associated with improved diagnosis (detection of cerebral vascular abnormalities) and the availability of care to patients with cerebrovascular diseases at various stages of medical care. AIS thrombolytic therapy is the most effective treatment in adults. Currently, there are no available high level recommendations for thrombolytic therapy in children. In March 2018, the Center for the Treatment of Cerebrovascular Pathology in Children and Adolescents at Morozov city children hospital began using this therapy. Between 2018 and 2020, 136 children were managed with AIS. Of these patients, 15 children were managed with Thrombolysis. The authors present a review of literature, analysis of local experience and a pediatric Thrombolysis protocol based on reviewed international and local literature.

**RESUMEN.** En los últimos años, el número de casos diagnosticados de accidente cerebrovascular isquémico arterial (AIS) en niños ha aumentado significativamente. Según el Centro para el Tratamiento de Patología Cerebrovascular en Niños y Adolescentes (centro primario de accidentes cerebrovasculares en niños) en el hospital infantil de la ciudad de Morozov, la incidencia de enfermedades vasculares cerebrales en niños en Moscú fue de 6.59 / 100.000 en 2015, 6.51 / 100.000 en 2016, 6.43 / 100 000 en 2017, 5.86 / 100 000 en 2018, 6.69 / 100 000 en 2019 y 10.95 / 100 000 en 2020. El aumento de la frecuencia de detección de ictus isquémico agudo (AIS) en niños y adolescentes se asocia principalmente con un mejor diagnóstico (detección de anomalías vasculares cerebrales) y la disponibilidad de atención para los pacientes con enfermedades cerebrovasculares en las distintas etapas de la atención médica. La terapia trombolítica AIS es el tratamiento más eficaz en adultos. Actualmente, no hay recomendaciones de alto nivel disponibles para la terapia trombolítica en niños. En marzo de 2018, el Centro para el Tratamiento de Patología Cerebrovascular en Niños y Adolescentes del hospital infantil de la ciudad de Morozov comenzó a utilizar esta terapia. Entre 2018 y 2020, 136 niños fueron manejados con AIS. De estos pacientes, 15 niños fueron tratados con trombólisis. Los autores presentan una revisión de la literatura, el análisis de la experiencia local y un protocolo de trombólisis pediátrica basado en la literatura revisada internacional y local.

**KEY WORDS:** Acute ischemic stroke, Thrombolysis, alteplase, Neuroimaging, reperfusion.

\* Author to whom correspondence should be addressed. *E-mail:* dr.zohidov@gmail.com