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Mechanical thrombectomy for pediatric acute ischemic stroke review of the literature and treatment algorithm

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Objective: In light of the recent strongly positive randomized controlled adult mechanical thrombectomy trials, we sought to review the available literature and perform a meta-analysis on intra-arterial pediatric stroke intervention with a focus on modern mechanical devices.

Methods: A PubMed search was performed for pediatric patients undergoing intra-arterial treatment of acute ischemic stroke using modern devices between 2008 and 2015. A total of 29 patients were included in this retrospective meta-analysis.

Results: The average age was 10.3 years old, 74.1% were male, the middle cerebral and basilar arteries accounted for 89.6% of 36 occluded vessels and the average pediatric stroke scale score was 18.1. The average time from symptom onset to intervention was 8.8 hours and 13.8% of patients received IV tPA prior to mechanical thrombectomy. Stent retrievers were used in 58.6% of cases, the Penumbra system in 34.5% and the Merci device in 27.6%. TICI 2b/3 recanalization was achieved in 75.9% of cases. There were no major adverse events related to intervention, although 1 procedure was associated with device malfunction, without definite change in long term outcome. The average mRS was <1 (0.86) at the longest available follow-up period, based on clinical description or provided modified Rankin scale score.

Conclusions: This study suggests mechanical thrombectomy in pediatric patients presenting with high pediatric NIHSS scores and proximal large vessel occlusion is associated with high recanalization rates and excellent clinical outcome, although this is a retrospective review and sample size is too small to make any definitive conclusion.

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