



New insights (and new interrogations) in perinatal arterial ischemic stroke

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With an incidence of 1/2800 to 1/5000 live-births, perinatal arterial ischemic stroke is the most frequent form of cerebral infarction in children. About 40% of the children do not have specific symptoms in the neonatal period, and are only recognized later with the emergence of motor impairment, developmental delay, specific cognitive deficiency or seizures. In the remaining 60%, children present with early symptoms, mostly recurrent focal seizures in the first 3 days of life. The diagnosis is easily confirmed by cranial ultrasounds and MRI. Early MRI has both a key role in the diagnosis, dating the injury, but also an important prognostic value to predict the motor outcome of the child. Indeed, although the infarct does not recur, the majority of children show subsequent sequels: cerebral palsy, epilepsy, cognitive or behavioural problems. Finding predictors of outcome regarding these latter concerns (and the way to prevent or alleviate them) is of major interest. The main etiological hypothesis for perinatal AIS is a cerebral embolus, originating from the placenta through the foramen ovale. Most of the established risk factors are indeed either determinants or biomarkers of vasculo-placental pathology. Injury to the cervico-cerebral arteries, giving rise to thrombus/embolus during the birthing process is also suggested. Both placento-embolic and traumatic theories are supported by a few, but well-analysed pathological or arteriographic reports. Nevertheless, their relative frequency, the implication of other mechanisms, and their repercussions to evidence-based preventive strategies remain to be determined. Moreover, the mechanism of stroke in the different groups of newborns with stroke (term vs. preterm; symptomatic neonates vs. those with a delayed presentation) is likely to be different, and there is a need for future studies to assess all populations as different entities. Neonatal supportive care remains important for all infants while there is no evidence for preventive anticoagulant use at present. In an effort to reduce neurological dysfunction, and in adjunction with ongoing physical therapy and pharmacological treatment, new rehabilitative interventions, such as constraint-induced movement therapy and mirror therapy, are increasingly being used.

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