

With an incidence around 1/3500 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 with a delayed diagnosis of impairments including hemiparesis, language delay, behavioral problems, cognitive deficiency, and epilepsy. Outcome studies demonstrate that neonatal stroke has a low mortality rate and does not recur. Plasticity of the immature brain probably allows limiting motor and language impairment. In our cohort of patients with neonatal arterial ischemic stroke (AVCnn), 25% of children present with hemiplegia at 2 years of age. Early determinants of motor outcome were available on neonatal imaging. Quality of life was not different at 3,5 years vs. the general population of children of the same age. If early diagnosis can lead to early rehabilitation intervention, little is known about these interventions' efficacy and if they may lead to better outcomes for these children. Over the next 5-years, one of the objectives of the French Centre for Pediatric Stroke is to propose guidelines for diagnosis, management and rehabilitation of patients with perinatal arterial ischemic stroke based on expert consensus and literature review.

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Energy expenditure of stroke patients in the sub-acute phase according to their walk ability

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Keywords: Stroke; Energy expenditure; Walk ability; Sensor
Objective.– To determine the level of energy expenditure of stroke patients according to their walk ability.

Method.– Energy expenditure (EE) of 88 patients was estimated by a sensor SenseWear (BodyMedia) carried two consecutive days between 9am and 4:30pm, period of rehabilitation. Patients were divided into three groups according to their self-assessed by Fonctionnal Ambulation Classification (FAC/5). G1 (FAC 0, 34 patients who were unable to walk), G2 (FAC 1 or 2, 30 patients walking with physical assistance) and G3 (FAC \geq 3/5, 24 patients walking without physical assistance).

Results.– There were significant differences for global EE (Kcal) between G1(653.4 ± 179.2)/G3(732.7 ± 162.7) and G2(625.6 ± 141.7)/G3(732.7 ± 162.7), the moderate EE (Kcal) between G1(70.1 ± 108.5)/G3(129.9 ± 152.0) and G2(81.8 ± 98.1)/G3(129.9 ± 152.0) and the time of moderate activity (minutes) between G1(17.1 ± 28.6)/G3(31.7 ± 37.1). However, no differences were found between G1 and G2.

Discussion.– An increase of EE as a function of the walk ability was expected. But this hypothesis is rejected due to similar EE levels between G1 and G2. These patients should be asked in a double objective: to improve the quality of their walk and increase their EE.

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Functional, cognitive and school outcomes after childhood stroke

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Keywords: Stroke; Children; Outcome

Introduction.– Childhood stroke and studies on long-term outcome following stroke are rare. The aims of the study were to study clinical presentation and long-term outcomes following childhood stroke.

Methods.– We retrospectively reviewed the files of children consecutively admitted to a physical medicine and rehabilitation department following childhood stroke between 1992 and 2010. Age at onset, etiology, motor, sensory and cognitive impairments upon admission and discharge, first and last neuropsychological assessments and academic outcome were collected.

Results.– Over the study period, 128 children were hospitalized following ischemic ($n=45$) or hemorrhagic ($n=83$) stroke. Upon admission, at day 39, 53% had hemiplegia and 39% were not able to walk. Upon discharge 76% were walking independently and 54% could not use their hand.

Neuropsychological assessment performed on average 6 and 41 months post stroke indicated severe impairments, with FSIQ around 1SD below the expected values. Patients with right hemisphere stroke had impaired PIQ and normal VIQ, whereas patients with left hemisphere stroke had significant impairments in both VIQ and PIQ. After a mean follow up of 52 months, only 37% were following normal curriculum.

Discussion.– Childhood stroke leads to severe and long lasting functional and cognitive impairments, with negative consequences on schooling.

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An analysis of tests for hand functions in patients with stroke

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Objective.– Stroke is the source of severe and lasting functional difficulties at the upper limb, a major obstacle to daily life. Our aim is to present actual tests for assessing the upper limb functions, especially at the hand.

Methods.– We have searched on the main Internet sites, with keywords such as upper limb, hand, function scale and stroke. Scales were classified according to the ICF. We have selected those that have been validated in stroke patients.

Results.– A dozen of scales have been identified, evaluating motor control (medical research council; Fugl Meyer), manipulation of non-significant objects (nine hole peg test, box and block test, action research arm test), manipulation of significant objects (Frenchay arm test, arm motor ability test, Rivermead motor assessment, Wolf motor function test), and participation in daily living activities (motor activity log, abihand, upper limb assessment in daily living). But their psychometric properties and practical interest (therapeutic) were highly variable.

Conclusion.– Many scales have been created to assess the upper limb and the hand. Priority should be given to those which investigate patient difficulties in daily living situations, and help to define objectives and treatment modalities.

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Randomized controlled trial comparing implanted peroneal nerve stimulation and ankle foot orthosis in spastic paresis

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Keywords: Spastic paresis; Gait; Implanted functional electrical stimulation; Ankle foot orthosis

Introduction.– Selective functional electrical stimulation (FES) of the peroneal nerve aims to improve ankle dorsiflexion during the swing phase of gait in spastic paresis. We compared gait analysis with implanted FES versus ankle foot orthosis (AFO) in chronic paresis.