AVC de l'enfant Centre national de référence

Thursday, 23 August 2018

Hello everyone,

Le centre national de référence AVC de l'enfant is delighted to bring you this free bulletin of published research into stroke in children, as indexed in the NCBI PubMed (Medline) database.

Kind regards,
Le centre AVC de l'enfant

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Management & Cure:

[Primary versus secondary mechanical thrombectomy for anterior circulation stroke in children: An update.]

Cappellari M(1), Moretto G(2), Grazioli A(3), Ricciardi GK(3), Bovi P(2), Ciceri EFM(3).

J Neuroradiol. 2018 Mar;45(2):102-107.

This review of the literature on the use of mechanical thrombectomy (MT) in children with acute ischemic stroke from occlusion of the internal carotid artery and the proximal middle cerebral artery (MCA) compares the efficacy and safety of primary and secondary MT. We analyzed the data reported for 24 case reports from 20 relevant articles published up to 31 December 2016 and the data of a patient treated at our institution. Eighteen cases received primary MT and 7 received secondary MT. The proportions of complete MCA recanalization, small infarcts, and asymptomatic intracranial hemorrhage were similar in both MT groups (73% [11/15] vs. 67% [4/6], 58% [7/12] vs. 60% [3/5], and 15% [2/13] vs. 17% [1/6], respectively). The proportion of favorable neurological outcomes was higher for the primary MT group (69% [11/16] vs. 43% [3/7]). We found no substantial differences in efficacy and safety between primary and secondary MT for anterior circulation stroke in children.

Risk Factors for Peri-Procedural Arterial Ischaemic Stroke in Children with Cardiac Disease

Asakai H(1), Stojanovski B(2)(3), Galati JC(4)(5), Zannino D(4), Cardamone M(6), Hutchinson D(7)(3), Cheung MMH(7)(3), Mackay MT(8)(9).

Pediatr Cardiol. 2017 Oct;38(7):1385-1392.

Improved survival of children with congenital heart disease has led to increasing focus on neurodevelopmental outcome, as close to half of the infants undergoing cardiac surgery are affected by neurodevelopmental disability. Stroke is particularly important as it frequently results in permanent neurologic sequelae. The aim of this study was to investigate risk factors for peri-procedural arterial ischaemic stroke (AIS) in children with cardiac disease. A retrospective case-control analysis of children aged <18 years with radiologically confirmed AIS following a cardiac procedure admitted to the Royal Children's Hospital Melbourne between 1993 and 2010. Each case was matched with two controls with similar cardiac diagnosis, procedure type, age and date of procedure. Demographics and peri-procedural data were collected from medical records and departmental database. Fifty-two cases were identified. Multivariable analysis identified post-procedural infection (OR 6.1, CI 1.3-27, p = 0.017) and length of ICU stay (OR 4.0, CI 1.4-11, p = 0.009) as risk factors for AIS. Although the study is limited to a single-centre cohort, length of ICU stay and post-procedural infection were identified as risk factors for AIS. These findings demonstrate these factors to be important areas to focus attention for stroke prevention in children with cardiac disease.

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Intervention & Rehabilitation:

Effects of a school-based stroke education program on stroke-related knowledge and behaviour modification-school class based intervention study for elementary school students and parental guardians in a Japanese rural area.

Kato S(1), Okamura T(1), Kuwabara K(1), Takekawa H(2), Nagao M(3), Umesawa M(3), Sugiyama D(1), Miyamatsu N(4), Hino T(5), Wada S(5), Arimizu T(5), Takebayashi T(1)(6), Kobashi G(3), Hirata K(2), Yokota C(5), Minematsu K(5).

BMJ Open. 2017 Dec 21;7(12):e017632.

OBJECTIVES: This study aimed to determine the effect of a stroke education programme on elementary school students and their parental guardians in a rural area in Japan that has high stroke mortality.
DESIGN: School class based intervention study.
SETTING: Eleven public elementary schools in Tochigi Prefecture, Japan.
PARTICIPANTS: 268 students aged 11-12 years and 267 parental guardians.
INTERVENTIONS: Students received lessons about stroke featuring animated cartoons and were instructed to communicate their knowledge about stroke to their parental guardians using material (comic books) distributed in the lessons. Stroke knowledge (symptoms, risk factors and attitude towards stroke) and behavioural change for risk factors were assessed at baseline, immediately after the programme and at 3 months. We also evaluated behavioural change for risk factors among parental guardians.
RESULTS: The percentage of students with all correct answers for stroke symptoms, risk factors and the recommended response to stroke was significantly increased at 3 months P<0.001). We observed a significant increase in the percentage of guardians who chose all correct symptoms (P<0.001: 61.0% vs 85.4%) and risk factors (P<0.001: 41.2% vs 59.9%) at 3 months compared with baseline. The percentage of parental guardians with a high behavioural response to improving risk factors was significantly increased at 3 months compared with baseline (P<0.001).
CONCLUSIONS: In a rural population with high stroke mortality, stroke education can improve knowledge about stroke in elementary school students and their parental guardians.
ETHICS AND DISSEMINATION: We conducted the intervention as a part of compulsory education; this study was not a clinical trial. This study was approved by the Ethics Committee of the National Cerebral and Cardiovascular Center (M27-026).

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Outcomes:

Factors Associated With Neurological Outcome After Childhood Stroke-Reply.

Grelli KN(1), Gindville MC(2), Jordan LC(2).

JAMA Neurol. 2016 Oct 1;73(10):1257-1258.

Comment on : JAMA Neurol. 2016 Jul 1;73(7):829-35. in JAMA Neurol. 2016 Oct 1;73(10):1257. Factors Associated With Neurological Outcome After Childhood Stroke. Goh EL(1), Sivakumaran P(1).

Back to Basics-Vital Sign and Blood Glucose Abnormalities and Outcome in Childhood Arterial Ischemic Stroke.

Beslow LA(1).

JAMA Neurol. 2016 Jul 1;73(7):785-6.

Comment on JAMA Neurol. 2016 Jul 1;73(7):829-35.

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Case Report:

Cerebellar Infarction: Unusual Manifestation with Facial Palsy, Focal Seizures, and Secondary Generalization.

Mühlbacher T(1), Bohner G, Bührer C, Dame C.

Neonatology. 2018;113(1):33-36.

BACKGROUND: Cerebellar infarction is exceedingly rare in neonates, usually occurring after traumatic birth. Lifelong sequelae can result from cerebellar damage with disorders of motor function, ataxia, and also cognitive dysfunction.

OBJECTIVES/METHODS: We report the clinical presentation of a preterm triplet infant delivered by elective cesarean who showed peripheral facial palsy immediately after birth.

RESULTS: Tonic seizures with high-voltage discharges over the contralateral cerebral hemisphere and secondary generalization were successfully treated with phenobarbital. Transnuchal ultrasound through the foramen magnum and subsequent MRI examinations revealed infarction of the left cerebellar hemisphere.

CONCLUSIONS: In newborn infants, acute cerebellar stroke may have direct epileptogenic potential.

Vertebral Artery Dissection Masquerading as Concussion in an Adolescent.

Kumar G, Ludwig B, Patel VV..

Pediatr Emerg Care. 2018 May;34(5):e97-e99.

OBJECTIVE: Educate providers about the clinical presentation and consequences of delaying diagnosis of traumatic vertebral artery dissection with thromboembolic ischemic strokes in the pediatric population. Vertebral artery dissection is often difficult to diagnose and can be a potentially devastating cause of ischemic stroke.

METHODS: Review of the chart, peer review/discussion, and imaging interpretation.

RESULTS: A 16-year-old boy was admitted with confusion after a head and neck trauma was sustained while wrestling. (Glasgow Coma Scale=15, NIHSS = 0). Investigations including computed tomography (CT) head and cervical spine were normal. He then developed severe nausea, vomiting, dizziness, and headaches and was admitted for symptoms of concussion. Ten hours later, patient declined (hypertensive and unresponsive) and was noted to have decerebrate posturing. After emergent intubation, he was transferred to the pediatric intensive care unit. Repeat CT head showed an acute left cerebellar infarct with associated cerebellar edema resulting in effacement of the fourth ventricle/basilar cisterns and acute hydrocephalus. The CT angiography and magnetic resonance imaging of brain confirmed arterial dissection and near occlusion of the left vertebral artery at the C2 level. Extensive infarct was seen in the left cerebellum, brainstem, and right cerebellum. During a prolonged hospital stay, the family opted to continue care, and he was transferred to an inpatient rehabilitation facility because of limited brainstem activity, being nonverbal, and not demonstrating purposeful spontaneous movements.

CONCLUSIONS: Detailed history and thorough neurological examination in conjunction with appropriate imaging are necessary to distinguish between brainstem/cerebellar ischemia from vertebral artery dissection and concussion.

Brainstem infarction associated with HHV-6 infection in an infant.

Wada A(1), Muramatsu K(2), Sunaga Y(3), Mizuno T(3), Takei M(3), Ogasawara S(3), Uchida M(3), Tsukida K(4), Tashiro M(3).

Brain Dev. 2018 Mar;40(3):242-246.

INTRODUCTION: The relevant literature includes several case reports on cerebral infarction in children with HHV-6 infection; however, there is no report of brain stem infarction.

CASE: An 11-month-old girl was hospitalized because of fever. She was unable to stand up and meet her mother's gaze. Magnetic resonance imaging (MRI) indicated a right pons and mid-brain lesion; a diagnosis of brainstem infarction was made. After her fever subsided, a rash developed on her trunk and limbs; blood examination results indicated a primary HHV-6 infection. She was treated with aspirin, edaravone, and mannitol to prevent further complications. At the age of 18months, the auditory brainstem response (ABR) was unremarkable and she is developing well.

DISCUSSION AND CONCLUSION: A limited number of studies have reported HHV-6 infection-associated infarction, and no cases of brainstem infarction have been reported. One possible cause of cerebral infarction is antiphospholipid antibody syndrome (APS) triggered by the infection. HHV-6 may also directly infect vascular endothelial cells and cause angiopathy. However, the real mechanism of infarction remains unclear. Our patient had a favorable prognosis despite brainstem infarction.

Bilateral haemorrhagic basal ganglia infarction associated with early-onset group B streptococcus meningitis.

Gupta R(1), Maraiyesa T(1), Conry B(2).

BMJ Case Rep. 2018 Jan 9;2018.

A 2-day-old infant presented with poor feeding and grunting. Investigations revealed a raised C reactive protein of 164. Full septic screen was done, which subsequently confirmed a diagnosis of group B streptococcus meningitis. Baby was apyrexial and haemodynamically stable. There were no obvious neurological manifestations, and a routine cranial ultrasound scan was done, which revealed echogenic changes in the basal ganglia and thalami. MRI brain showed extensive haemorrhagic infarction within the lentiform and caudate nuclei with involvement of both posterior limbs of the internal capsule. This was followed by triventricular hydrocephalus needing shunt procedure. The clinical course was complicated by infantile spasms, which were treated with vigabatrin and steroids and subsequent global developmental delay and cerebral palsy.