Sylvian stroke in a 12-year-old patient secondary to varicella arteriopathy

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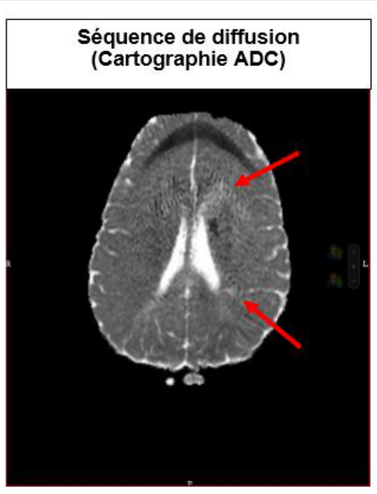
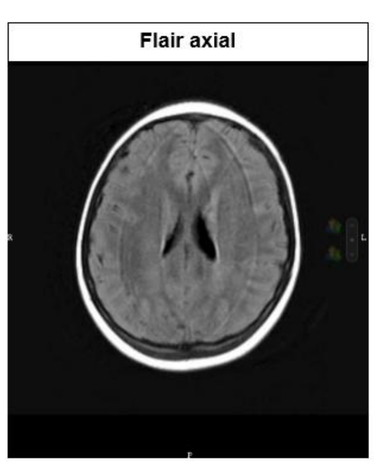
Introduction

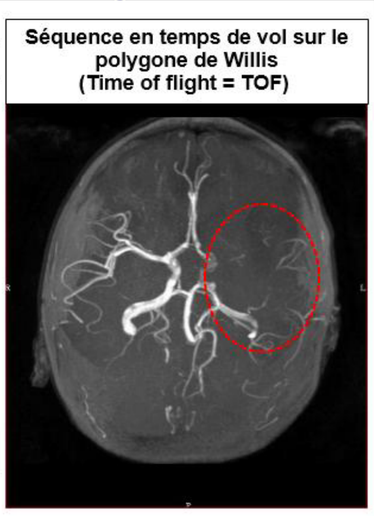
Strokes are rather rare in children and their management is not well codified in pediatrics in our country. Given its severity, it is important to remember the signs and possible treatment of this vascular event.

Case Report

SL is a 12-year-old girl with a history of B lymphoblastic leukemia in remission, without treatment for 7 years.
She was seen at emergency room of another hospital for a sudden loss of strength in her right upper limb and a facial paralysis followed by Broca's aphasia along with 4 episodes of vomiting. Biology, non-injected cerebral scanner and carotid doppler were normal. The electroencephalogram showed a slow dysrhythmia in the linguistic sector.
In our emergency department, the angioscan performed revealed a slenderer left internal carotid and a focal stenosis of the left M1 axis with an ischemia of the left sylvian territory. Partial repermeabilization was possible in arteriography before transfer to the ICU.
Administration of noradrenaline to maintain a supranormal blood pressure and of aspirin for anti-aggregation. Favourable initial evolution with progressive improvement of aphasia in the first 24 hours. After 48 hours, there was a neurological deterioration with increased aphasia. A control imaging by cerebral magnetic resonance imaging (CMRI) revealed new subacute ischaemic foci in the left sylvian territory. Progressive neurological recovery completed by day six.
Extensive infectious, autoimmune, tumoral, inflammatory and coagulation testings were carried out and revealed no abnormality apart from positive VZV IgG. A varicella was noted four months earlier.
The CSMRI one week after showed signs of blood brain barrier incompetence, reappearance of flow in the proximal part of left M1 and persistence of a discrete parietal irregularity of the latter compatible with sequelae of vasculitis.
After multidisciplinary meeting with experts, aspirin maintenance and regular CSMRI checkups have been decided. Stable condition in neuropediatrics before discharge.







Discussion

This case prompted interest in a reminder of a codified management of stroke in children. Experts stress the importance of CSMRI in these cases. An arteriography and a fibrinolysis should be discussed on a case-by-case basis, and if performed, it should be done early to be useful, as in adults. Aspirin is recommended.

Identify potential stroke
Acute focal neurological deficit
Speech disturbance
Unexplained, persistent change in conscious level (GCS ≤ 12 or AVPU < V)
Also consider stroke in children with:
New onset focal seizures
New onset severe headache
Ataxia
Dizziness
Resolved acute focal neurological deficit
Sickle Cell Disease

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Emergency department: activate acute stroke pathway
Intubate if GCS < 8, AVPU = U, if there is a loss of airway reflexes or there is suspected/proven raised intracranial pressure
Administer high flow O2 and target SpO2 ≥92%
If the circulation is compromised give a 10 ml/kg isotonic fluid bolus
Perform a capillary glucose test within 15 minutes of presentation. If capillary blood glucose 3 mmol/L give 2 ml/kg of 10% dextrose and consider a hypoglycaemia screen

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Investigation
Venous or capillary blood gas
FBC, PT, APTT
Fibrinogen
Urea and electrolytes
Blood glucose
Group and save
C-reactive protein
Liver function tests
Blood cultures as appropriat

Monitoring
BP
Temperature
SpO2
HR
RR
GCS
Assess PedNIHSS score

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Urgent brain imaging
Perform CT/CTA < 1 Hour of ED admission
Record time of symptom onset: window for tPA = 4,5 hours
Record time of admission: window for imaging = 1 hour

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Stroke mimic
MRI with stroke-specific sequences should be performed in patients with suspected stroke when there is diagnostic uncertainty

Haemorrhagic stroke
Urgent discussion with neurosurgical team regarding need for transfer

Arterial ischaemic stroke
Consider suitability for other emergency interventions, such as; Thrombectomy or Decrompressive craniectomy

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Treatment for Arterial ischaemic stroke (AIS)

Aspirin
5mg/kg ≤ _1 hour (Unless CI, e.g. parenchymal haemorrhage)
Delay for 24 hours in context of thrombolysis

In children presenting with AIS Thrombolysis, the use of **tPA** *may* be considered if 2–8 years and *could* be considered if ≥ 8 years
If all of the following are true (and providing that there are no contraindications)
PedNIHSS ≥ _4 and ≤ _24
tPA can be administered ≤ _4.5 hours of symptom onset
CT has excluded intracranial haemorrhage
CTA demonstrates normal brain parenchyma or minimal early ischaemic change
CTA demonstrates partial / complete occlusion of the intracranial artery corresponding to clinical / radiological deficit
OR
MRI and MRA showing evidence of acute ischaemia on diffusion weighted imaging + partial / complete occlusion of the intracranial artery corresponding to clinical / radiological deficit

Royal College of Pediatrics and Child Health, RCPCH, & Stroke association. A *Stroke in childhood - clinical guideline for diagnosis, management and rehabilitation*. RCPCH [En ligne]. UK. 2017. Disponible : https://www.rcpch.ac.uk/resources/stroke-in-childhood-clinical-guideline.

Conclusion

An established protocol for strokes in children in our country will allow rapid management and may in some cases improve the prognosis.

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