Background

• Basal ganglia infarct as a consequence of minor head trauma is rare in children (Incidence of < 1%) however clinical history of such lesions is been favorable.
• A conservative therapeutic approach of such cases is considered most effective up to date.
• Mild head trauma is an independent risk factor leading to ischemic stroke with unclear pathophysiology.

Case Description

History:
• 5-year-old girl, previously healthy
• Presented with inability to use her left arm and leg as per parents
• Hx of minor head trauma after a fall from bed on the previous day

Physical Examination:
• Unremarkable except for left sided hemiparesis and impairment of sensation on the same side.

Discussion

• Post-Traumatic Basal Ganglia infarct in pediatric is exceedingly rare. The pathophysiology remains unclear, however many hypothesis have been proposed in literature including:

1. Children’s lenticulostriate arteries (Figure A) at basal ganglia are short and exhibit an acute angle at origin compared to adults (Figure B) therefore easily disrupted in cases of trauma
2. Injury to the middle cerebral artery and the associated reduction in partial pressure of carbon dioxide due to crying upon trauma results in narrowing of the blood vessel and thrombosis
3. Focal dissection of vessel is been reported

4. History of viral illness; such as Varicella zoster infection and CMV, could it be possible that they cause disruption of vascular endothelial cells and increase brittleness of the lenticulostriate arteries
5. Genetic mutations in the calcium voltage-gated channel subunit α1 A gene and basal ganglia mineralization is also a major risk factor for infarct identified after minor head

Investigations

<table>
<thead>
<tr>
<th>CBC</th>
<th>Coagulation</th>
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<tbody>
<tr>
<td>Hb : 9.8 g/dl</td>
<td>PT : 11.9</td>
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<tr>
<td>Hct : 30.7</td>
<td>PTT : 29.3</td>
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</tbody>
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Metabolic workup: (N)

<table>
<thead>
<tr>
<th>Ammonia and Lactic acid : (N)</th>
<th>D- Dimer : 0.19</th>
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<tbody>
<tr>
<td>Anti thrombin III : (N)</td>
<td></td>
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<td>Protein S and C : (N)</td>
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Course and Follow up

• Received Arginine 500 mg TiD and Aspirin 75 mg/day for 1 week then 30 mg daily
• Started on physiotherapy
• Patient started to show gradual improvement in neurological function over several weeks

Conclusion

Basal ganglia ischemic lesions following minor head trauma is rare in children. After exclusion of other causes with the available lab and radiological workup, one could suggest a confederation among ischemic stroke and head injuries by the above-mentioned mechanisms. Such cases have a good prognosis with complete remission in few weeks to months.

References: