

## 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.

## Investigations

CBC	Coagulation
Hb : 9.8 g\dl	PT : 11.9
Hct : 30.7	PTT : 29.3
<b>Metabolic workup : ( N )</b>	INR : 1.09
<b>Ammonia and Lactic acid : ( N )</b>	D- Dimer : 0.19
<b>ECHO and US carotids : ( N )</b>	Anti thrombin III : ( N )
	Protein S and C : ( N )

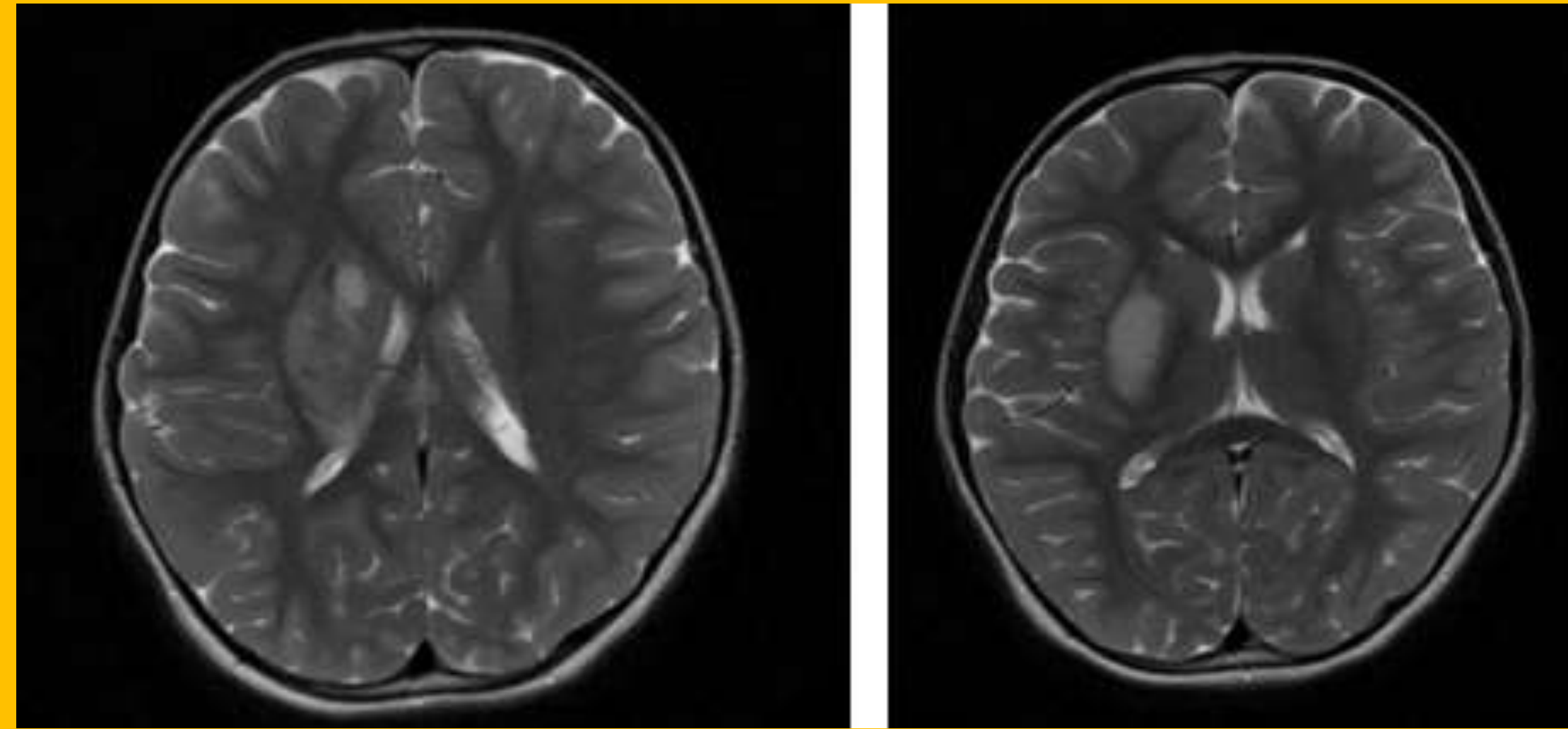


Figure 1 .Axial T2-weighted magnetic resonance image of brain , showing hyperintense area ( acute infarct ) involving the right globus pallidus, putamen and part of posterior limb of internal capsule

## Discussion

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

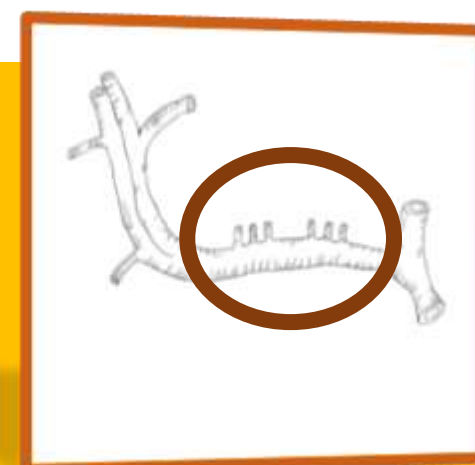


Figure A

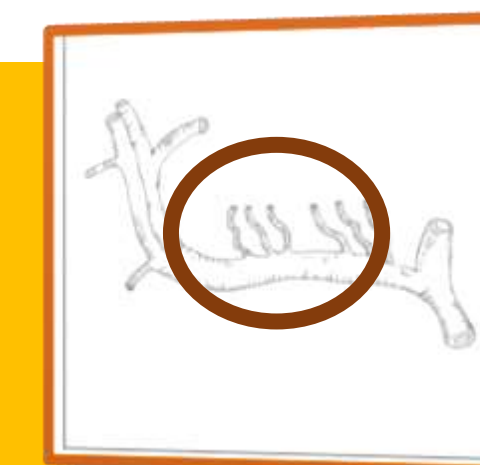


Figure B

## Discussion ( Continued )

- 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
- Genetic mutations in the calcium voltage-gated channel subunit  $\alpha 1 A$  gene and basal ganglia mineralization is also a major risk factor for infarct identified after minor head

## 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 :

- Bodensteiner, J. B. (1992). Clinical features of vascular thrombosis following varicella. *Archives of Pediatrics & Adolescent Medicine*, 146(1), 100.
- Earley, C. J., Kittner, S. J., Feeser, B. R., Gardner, J., Epstein, A., Wozniak, M. A., Wityk, R., Stern, B. J., Price, T. R., Macko, R. F., Johnson, C., Sloan, M. A., & Buchholz, D. (1998). Stroke in children and sickle-cell disease: Baltimore-Washington cooperative young stroke study. *Neurology*, 51(1), 169-176.
- Ganesan, V., Hogan, A., Shack, N., Gordon, A., Isaacs, E., & Kirkham, F. J. (2000). Outcome after ischaemic stroke in childhood. *Developmental Medicine & Child Neurology*, 42(7), 455-461.