

Letter to the Editor

Trauma-induced Paediatric Stroke in a Carrier of the *Prothrombin G20210A* Heterozygous Mutation

Dear Editor,

Stroke is rare in children with an incidence of 1.6 cases of ischaemic arterial strokes per 100 000 children per year. However, stroke is among the most important causes of morbidity and mortality in children.¹

We had a child patient who has had ischaemic brain pathology in the right middle cerebral artery area with no vascular abnormality or any signs of thrombosis and who has been tested and found to be heterozygous for the *Prothrombin G20210A* mutation.

The 16 month old girl fell from the sofa and the occipital part of the head was mildly injured without losing consciousness. A few hours later, parents noticed that their daughter was unable to move upper and lower extremities of left body side. After admission to Klaipeda Hospital (Lithuania), a computed tomography scan of the head was performed. Brain ischaemia was suspected, and the girl was transferred to the Hospital of Lithuanian University of Health Sciences "Kauno Klinikos" (Lithuania) for treatment. Magnetic resonance imaging showed brain ischaemia in the right middle cerebral artery with no vascular abnormality or any signs of thrombosis. During treatment of the acute ischaemic stroke, focal seizure episodes appeared – eyes were turning to the left and left hand convulsions occurred. The electroencephalogram (EEG) registered minimal and doubtfully clinically significant alterations characteristic to epilepsy in the occipital part of the brain. Phenobarbital was administered and convulsions ceased. A genetic test was performed in order to exclude the possibility of a prothrombotic genetic predisposition. Heterozygous *G20210A* mutation in the prothrombin gene was detected. Genetic analysis of the factor V Leiden R506Q mutation was negative.

After 6 months, patient was re-evaluated. No new complaints or seizure episodes during the 6 month period

were reported. Her vital signs and physical exam results were normal except for the left hemiparesis symptoms. Magnetic resonance imaging showed a glial scar in the previous ischaemic brain area. EEG returned no clinically significant characteristics that would indicate epilepsy.

Increased paediatric stroke rates are observed in children with congenital metabolic diseases, congenital heart disease, prothrombotic states or infection, head and neck trauma or in non-atherosclerotic arteriopathies. These factors are usually found in combination in children with stroke.² The presented patient had two factors: a rare genetic predisposition to thrombosis and head trauma. According to unpublished data, from all these patients (n=84), who had been hospitalised due to thrombotic complications at Hospital of Lithuanian University of Health Sciences "Kauno Klinikos" in Lithuania from 2014 until 2016, only 4 patients were carriers of *G20210A* mutation. Other authors have described ischaemic stroke cases but without head injury, or without genetic predisposition. In total 7 cases of patients with ischaemic stroke after mild head injury in children were presented by Rana and his colleagues.³ Attia and colleagues reported a 6-year-old boy with cerebral venous sinus thrombosis, who was a *G20210A* heterozygote.⁴

In conclusion, our case shows that *Prothrombin G20210A* mutation might be related to the increased risk of young-onset stroke after head injury.

Declaration of Interest

The authors declare that there is no conflict of interests.

Ethical Conduct of Research

The authors state that they have obtained appropriate institutional review board approval. In addition, for investigations involving human subjects, informed consent has been obtained from the participants involved.

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