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VENTRICULAR ARTERIOVENOUS MALFORMATION BLEEDING

A RARE CAUSE OF HEADACHE IN CHILDREN

Case report

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ABSTRACT - Headache as a chief complaint is rare in the paediatric emergency room. Actually, very seldom cases secondary to life threatening conditions as non-traumatic subarachnoid haemorrhage have been reported. A child with severe headache and nuchal rigidity and no other abnormalities on the physical examination is reported. Magnetic resonance angiography and cerebral angiography disclosed a ventricular arteriovenous malformation in the choroid plexus, supplied by the anterior choroidal artery, classified according to Spetzler grading system as grade 3 (deep venous drainage: 1; eloquence area: 0 and size: 2). The differences in the clinical presentations of the central nervous system arteriovenous malformation between children and adults are discussed.

KEY WORDS: secondary headache in children, arteriovenous malformation of the brain, pediatric stroke.

Hemorragia cerebral secundária a malformação artério-venosa ventricular: uma causa rara de cefaléia na infância. Relato de caso

RESUMO - Cefaléia como queixa principal raramente ocorre num serviço de emergência pediátrica. Quando isso acontece, casos de cefaléia secundária que trazem risco de vida, tais como a hemorragia subaracnóide são raramente relatados. Apresentamos o caso de uma criança que apresentou cefaléia de forte intensidade associada a rigidez de nuca, sem outras anormalidades no exame físico. A angioressonância e angiografia digital evidenciaram malformação arteriovenosa na topografia do plexo coróide do ventrículo lateral direito, nutrida pela artéria coroidéia anterior, grau III na classificação de Spetzler (drenagem venosa profunda: 1; área de eloqüência: 0 e tamanho: 2). Nós discutimos as diferenças na apresentação clínica das malformações arteriovenosas encefálicas nas crianças e adultos.

PALAVRAS-CHAVE: cefaléia secundária, malformação arteriovenosa do encéfalo, malformação arteriovenosa ventricular.

A headache due to a hemorrhagic stroke is a life-threatening clinical condition rarely seen in a paediatric emergency department[1,2]. When it occurs, an arteriovenous malformation should be ruled out. The arteriovenous malformation of the brain (AVM) accounts for 30% to 50% of such hemorrhagic strokes in children[3-6] and it has been associated with a 25% mortality rate[7]. On the other hand, the ventricular location is found in only 4% of the AVM in childhood[8]; and in 1,3% of the adult's AVM[9]. We report a child with a history of sudden headache secondary to a bleeding of a ventricular arteriovenous malformation.

CASE

A 9-year-old previously healthy girl was admitted to the Emergency Room with an eight-hour history of sudden onset of severe headache. The pain was pulsatile and bilateral and not accompanied by other symptoms. There is no history of migraine, epilepsy or stroke. Parents reported that soon after the onset of the headache the patient

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Fig 1. Computed tomography of the brain showing ventricular hemorrhage.

became drowsy for about one hour. No trigger factor was identified. On the neurological examination, the patient was alert and well oriented with no other abnormalities but mild nuchal rigidity.

Computed tomography of the brain revealed hemorrhage in the right lateral ventricle (Fig 1) and gadolinium-enhanced magnetic resonance imaging study of the brain disclosed a heterogeneous lesion in the mesial portion of the right temporal lobe, above and inside the temporal horn of the lateral ventricle. The lesion extended until the subependimary area of the trigono of the right ventricle. The lesion was hypointense on T1 and T2-weighted images and enhanced with the contrast. Other hyperintense T1 and T2-weighted images lesions were seen in the right lateral ventricle suggesting bleeding. Magnetic resonance angiography and cerebral angiography disclosed an arteriovenous malformation in part of the choroid plexus, supplied by the anterior choroidal artery (Figs 2 and 3). The AVM was classified according to Spetzler grading system as grade 3 (deep venous drainage: 1; eloquence area: 0 and size: 2).

A surgical procedure was done resulting in an almost complete excision of the AVM and without sequelae. The patient remains asymptomatic after one year of follow-up.

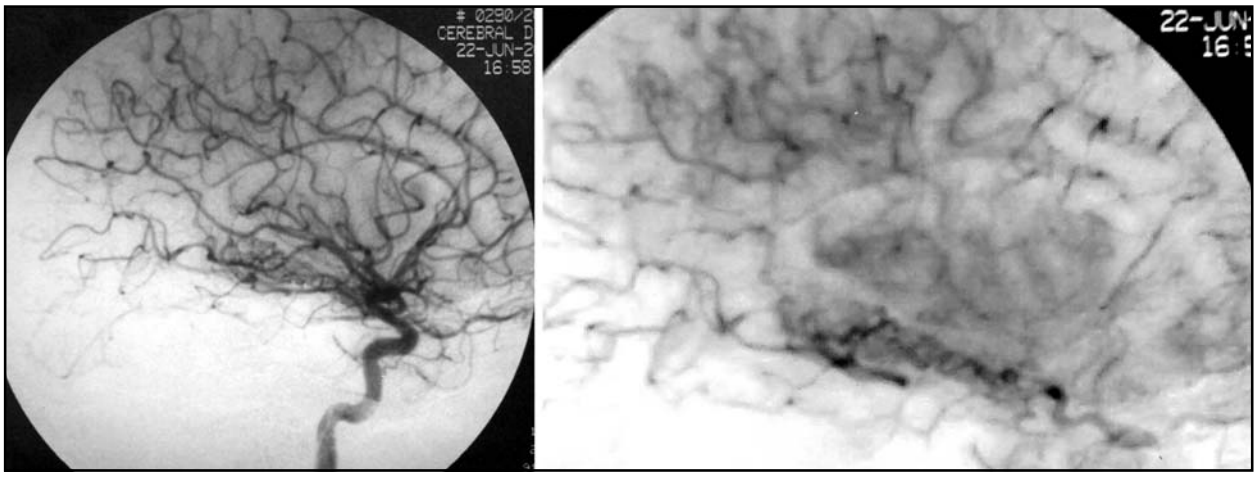
This report was approved by the Hospital Ethics Committee and her parents signed the informed consent.

DISCUSSION

Headache is a very common symptom in children[10,11], affecting approximately 82.9% of the Brazilian population ranging between 10 to 18 years of age[12]. Despite such high prevalence, headache as a chief complaint is rare in the paediatric emergency room. Actually, very seldom cases secondary to life threatening conditions as non-traumatic subarachnoid haemorrhage (NTSH) are seen[1,2]. Accordingly, the data regarding the occurrence of NTSH in childhood are scant. Previous reports suggest that an arteriovenous malformation of the brain is the most frequent cause of this condition in children[13], a condition by far more prevalent in adults[14].

The clinical presentations of AVM in children also differ considerably from those in adults. There is a high propensity (80%) for the AVM childhood to present bleeding[8], what is higher than that reported for adults[9,15-17]. Likewise, epilepsy was reported in 12-18%of the AVM`s children series[7,18] and in 16 to 53% of the adult patients[19,20]. In neonates, AVM has been recognized as a cause of life-threatening congestive heart failure[21].

Several authors have reported that the prognosis was not so good in children with AVM in comparison to adults[7,18,22]. Conversely, a better prognosis was suggested for purely intraventricular haemorrhage arteriovenous malformation as observed in our patient by some reports[23]. One factor that had a dramatic impact on the diagnosis and treatment of AVM was



Figs 2 and 3. Cerebral angiography showing the arteriovenous malformation, supplied by the anterior choroidal artery.

the development of the modern neuroimaging techniques[24]. The treatment, however, remains a challenging matter. Endovascular embolization, radiosurgery, surgical excision or a multimodality approach have been used to treat this condition, however studies are not conclusive yet[25].

This is an interesting case report of a rare condition that causes headache in children. The particular localization of the AVM produces a headache associated with nuchal rigidity without other abnormality on the neurological examination.

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