



Clinical case

Thrombophlebitis of the cavernous sinus in children: about a case

Thrombophlébite du sinus caverneux de l'enfant : à propos d'un cas

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Résumé

Nous rapportons le cas d'une fillette transférée dans notre service pour prise en charge d'une septicémie. A l'admission, l'examen physique a révélé un oedème palpébral droit, et un syndrome méningé franc. La tomodensitométrie cérébrale alors effectuée est revenue normale. Après 10 jours d'antibiothérapie, dans un contexte infectieux persistant, sont apparus au niveau de l'œil droit un ptosis, une ophtalmoplégie et une mydriase aréactive. La réalisation d'une IRM cérébrale a montré une thrombophlébite du sinus caverneux.

L'antibiothérapie réadaptée ainsi qu'un traitement anticoagulant ont été institués. Après quatre semaines, l'issue a été favorable, marquée par une régression complète des signes notamment ophtalmologiques et une disparition des signes radiologiques de thrombose du sinus caverneux. Toutefois une hydrocéphalie quadriventriculaire séquellaire a été notée.

Mots-clés : thrombophlébite, sinus caverneux, héparinothérapie, Sénégal.

Abstract

We report the case of a girl transferred to our

department for treatment of sepsis. On admission, physical examination revealed right eyelid edema and frank meningeal syndrome. The brain CT scan then performed returned to normal. After 10 days of antibiotic therapy, in a persistent infectious context, ptosis, ophthalmoplegia and areactive mydriasis appeared in the right eye. Brain MRI showed thrombophlebitis of the cavernous sinus.

Adapted antibiotic therapy and anticoagulant treatment have been instituted. After four weeks, the outcome was favourable, marked by a complete regression of the signs, particularly ophthalmological, and a disappearance of the radiological signs of cavernous sinus thrombosis. However, sequelae quadriventricular hydrocephalus was noted.

Keywords: thrombophlebitis, cavernous sinus, heparinotherapy, Senegal.

Introduction

Cavernous sinus thrombophlebitis is a rare condition in children. Its seriousness lies in the diversity of its clinical manifestations, which leads to a delay in

diagnosis that can be life-threatening for the child. Fortunately, magnetic resonance imaging has made it possible to improve diagnostic errors and speed up the implementation of treatment. Also, the advent of early antibiotic therapy has made it possible to reduce the incidence of the pathology.

Clinical case

A two-year-10-month-old girl with sickle cell stroke was admitted for fever, headache and vomiting food. The symptoms had begun four days earlier, prompting a paediatric consultation in a peripheral structure where an unspecified treatment had been prescribed. Two days later, right orbital cellulitis appeared, described as reactive, as well as left gonalgia.

She is hospitalized in a paediatric department where the diagnosis of sepsis and pyohemia with meningeal, pulmonary, ocular and joint locations was retained in the presence of a laboratory that revealed a cloudy cerebrospinal fluid with 3640 leukocytes/mm³, 65% of which were polynuclear damaged, 28% culture-negative lymphocytes and bilateral pneumonitis on chest X-ray.

She was put on cefotaxime 200 mg/kg/day, lincocin 30mg/kg/day, gentamycin 5mg/kg/day, ciprofloxacin 30mg/kg/day. However, the course was marked by the persistence of febrile peaks and the appearance of generalized tonic-clonic convulsive seizures on day 8 of his hospitalization. Transferred to our department at this stage, the physical examination revealed a fever of 38.2° with an altered general condition, right eyelid edema, left tympanic perforation, meningeal stiffness and swelling of the left knee.

The blood count showed neutrophil-predominant leukocytosis at 24990/mm³ with anemia at 7.4 g/dl microcytic hypochromium and thrombocytosis at 655000/mm³.

The CRP dosage is 204.99 mg/l.

CSF cytology showed 80 leukocytes/mm³ and culture was negative.

The search for BAAR in gastric tubing fluid, tuberculin intradermal reaction, blood cultures, thick

gout and cytobacteriological examination of urine were negative

The brain CT scan was normal.

After ten days of treatment, a lack of improvement in the patient's clinical condition was noted with the persistence of febrile peaks. The right eye presented: ptosis, ophthalmoplegia, areactive mydriasis and retinal venous dilations on examination of the fundus. The examination of the left eye returned normal.

Magnetic resonance imaging in the brain revealed a right hypointense signal and a peripheral T1 hypersignal of the right cavernous sinus concluding that thrombophlebitis of the right cavernous sinus was present.

Antibiotic therapy based on vancomycin in continuous infusion, ceftriaxone and gentamycin is then initiated combined with anticoagulant treatment based on Enoxiparin: 200 IU/kg/12h subcutaneously for 7 days followed by acenocoumarol Sintrom-based® relay: 1 mg per day orally for 42 days (INR = target 2-3).

Stable apyrexia was noted after 1 month of antibiotic therapy as well as a progressive regression of the right eyelid ptosis from day 25 of anticoagulant treatment (FIG.3). A clear regression of cavernous sinus thrombosis was highlighted by brain MRI at day 21 of treatment (FIG. 4).

At day 42 of treatment, the ophthalmological examination of the right eye returned to normal, with the disappearance of ptosis, normal mobility of the eyeball and a present and normal photomotor reflex (FIG. 5). Brain MRI highlighted the absence of thrombus of the right cavernous sinus; however, it revealed sequelae quadriventricular hydrocephalus (FIG.6).



Figure 1. Ptosis of the right eye

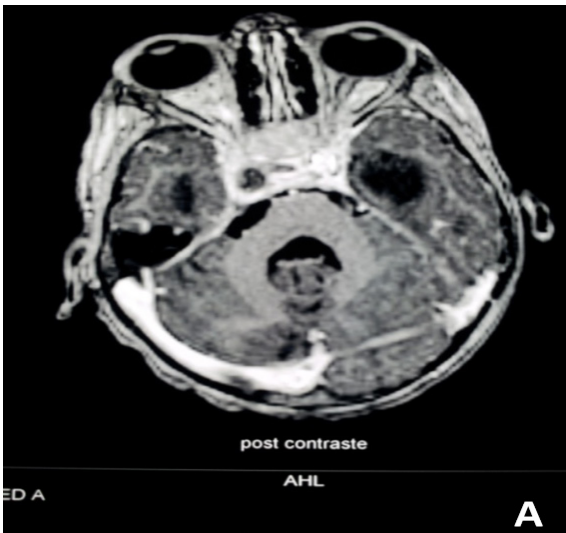


Figure 2A. Brain MRI, Thrombosis 17 on 9 mm intense hypo of the right cavernous sinus



Figure 2B. Brain MRI, Spontaneous peripheral hyperintensity on T1 of the right cavernous sinus

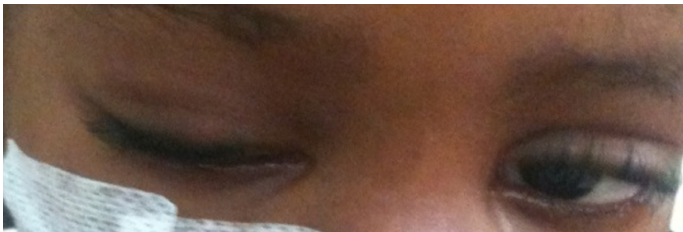


Figure 3. Ptosis on day 25 of anticoagulant treatment

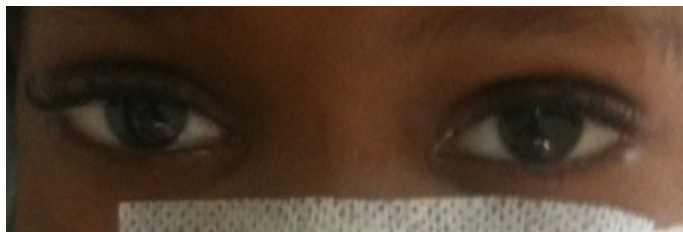


Figure 5. Complete regression of ptosis in the right eye on treatment day 42.



Figure 4. D14 brain MRI of anticoagulant treatment Clear regression of the right cavernous sinus thrombus 8 x 5 mm.

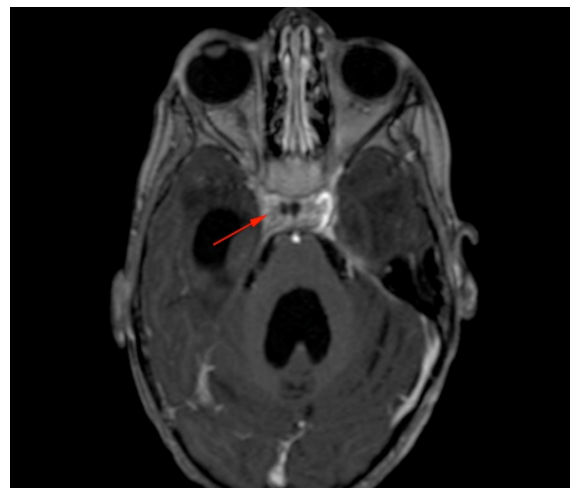


Figure 6. Brain MRI on D42 of anticoagulant treatment. Absence of thrombosis of the right cavernous sinus reflected by 1 normal enhancement. Significant quadriventricular hydrocephalus (sequelae of meningitis)

Discussion

Cavernous sinus thrombosis is a rare, serious infectious pathology whose course can be punctuated by fatal infectious complications. Due to its rarity, there are very few data in the paediatric population on clinical, paraclinical, therapeutic and prognostic aspects. In terms of frequency, cavernous sinus thrombophlebitis in children is estimated to be less than 1 case per 100,000 in several studies [1]. Its prevalence has decreased significantly thanks to

advances in antibiotic therapy, with an incidence of 0.7 per 100,000 children per year [2].

The largest series published in India from 1985 to 1988 included 14 children with 11 deaths and 3 survivors with permanent sequelae [3]. Another study of a cohort of 8 children in Thailand over a period of 30 years showed a favorable outcome in 7 of them [4].

The etiologies of cavernous sinus thrombophlebitis are multiple. Infectious origin is the most frequently described and revealing cause in children [5]. The most often recognized pathophysiological mechanism is the locoregional spread of an infectious focus of the ENT sphere (usual microbial sites), neglected or insufficiently treated; A generalized infectious process is rarely found [6]. This is because the absence of valves between the facial and ophthalmic veins and the cavernous sinus facilitates the spread of infection from the paranasal sinus and orbit to the cavernous sinus. Cavernous sinus thrombosis can also be a complication of otitis media and, more rarely, pharyngitis or dental infection. The most common cause is acute sinusitis [7].

In some series, the most frequently found germs are staphylococcus aureus [8]. Meningitis before or after diagnosis is difficult to establish in a precise chronological manner since the initial clinical picture is identical. Only the study of the cerebrospinal fluid, which is obligatory at the very beginning, as in our patient, allows us to decide.

As for aseptic thrombosis, it can be due to trauma or a pro-thrombotic etiology [7].

More rarely, no etiology is found, in which case it is called idiopathic thrombophlebitis. In our patient, no germ was isolated even though there was a frank non-specific biological inflammatory syndrome; This was probably linked to prior antibiotic therapy.

The diagnostic difficulty lies in the polymorphism that characterizes the clinical manifestations. Infectious signs and those reflecting neurological damage are often predominant. [9].

This lack of specificity of clinical signs makes early diagnosis difficult to make. However, it is reported

that early diagnosis reduces mortality by 5-15% [10]. The picture generally found in cavernous sinus thrombosis is characterized by ophthalmic involvement with eyelid edema and ptosis of the eyelid [5], decreased visual acuity, headache and long-term fever [2].

In our patient, the ophthalmological (ptosis, ophthalmoplegia) and neurological (disturbances of consciousness, intracranial hypertension) signs were at the forefront of the picture.

Once histopathological, diagnosis is now made quickly thanks to the considerable contribution of computed tomography, CT angiography and bone marrow resonance imaging (MRI) [8]. The context of poverty of the technical platform could hinder the rapid completion of such examinations [11]; Nevertheless, in our patient, they were a decisive turning point in the therapeutic process. [8] [12]. Currently, medical practice requires imaging examinations. CT and MRI with contrast have proven to be the most sensitive and are considered the gold standard for diagnosing this condition. The experience in the 12 children treated at the Children's Hospital of Philadelphia summarizes these findings and found a 100% sensitivity of the cranial CT scan or MRI with contrast injection, compared to 0% for no contrast [12]. Computed tomography with contrast agent or MRI are recommended in the diagnostic search for cavernous sinus thrombosis; Indeed, CT alone may not detect thrombosis by confusion with bone structures, nor may it be able to discern specific filling abnormalities [13]. This is why MRI is more sensitive to the detection of the complication. In addition, the latter exposes much less to X-rays than the CT scan; This is a significant advantage for the pediatric population [2] [10]. However, the precise diagnosis made by MRI remains a challenge: many semiological pitfalls exist. This sometimes requires the assistance of an experienced neuroradiologist [14].

The septicemic context, the suggestive clinic and the performance of the brain MRI with contrast in our patient made it possible to make the diagnosis.

Also, the regression of ophthalmological signs was evidence of a favorable evolution, confirmed by the regression of radiological signs.

Symptomatic treatment is based on resuscitation measures. Management consists essentially of early aggressive antibiotic therapy combined with anticoagulant treatment, a combination therapy that resulted in complete recovery in 74% of patients according to the Abir et al study [2].

Probabilistic antibiotic therapy is directed against staphylococci and anaerobic germs before being adapted to the germ found in culture [15]. It has led to a drastic reduction in mortality as well as in the rate of occurrence of complications, which has fallen from 80% to 20% [2]. The fact remains that in our case, even if no germ was found, a broad-spectrum antibiotic therapy was administered allowing a favorable outcome.

Anticoagulant treatment, on the other hand, has long suffered from the absence of a consensual regimen [8]. However, a significant risk of thrombosis spreading could exist in the absence of treatment, thus justifying close clinical and radiographic monitoring [15]. Specific treatment of thrombosis with systematic anticoagulation is also recommended [15]: the therapeutic protocol uses low molecular weight heparins (LMWH) with oral anticoagulants (AO) for an average duration of six weeks [16]. The American Stroke Association recommends LMWH for cerebral venous thrombosis outside of the neonatal period even though there is evidence of cerebral hemorrhage; They are thought to reduce the risk of neurological sequelae, improve the rate of recanalization and prevent the spread of thrombosis [2]. The effectiveness of the treatment is attested by obtaining an INR between 2-3. [15]. However, several molecules interfere with the action of AOs whose mechanism is based on the inhibition of vitamin K synthesis; treatment monitoring will be more closely monitored in children on AO [17]. This explains the delicate nature of anticoagulation in paediatrics. Our patient benefited from this regimen and no iatrogenic complications were noted.

Surgical treatment is rarely indicated in this specific case. Typically, it is more of a surgical drainage of a purulent collection [13].

The prognosis is generally good thanks to the anticipation of antibiotic therapy and heparin therapy.

Conclusion

Cavernous sinus thrombosis in children is a rare pathology with various etiologies. Infectious causes are the most common. The early diagnosis, made by imaging, has revolutionized therapeutic management, which is now based on both appropriate antibiotic therapy and heparin therapy. This has improved the vital and functional prognosis of patients. Prevention is based on the correct treatment of infections, especially ENT.

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Available online : October 30, 2024

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Conflict of interest : None

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To cite this article :

AD Nakoulima, K Fall, M Fall, T Niang, MA Seck, M Ndiaye. Thrombophlebitis of the cavernous sinus in children: about a case. *Jaccr Africa* 2024; 8(4): 94-99
<https://doi.org/10.70065/24JA84.006L023010>