Transverse Sinus Thrombosis Associated with Otitis Media and Mastoiditis

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ABSTRACT

A case of transverse sinus thrombosis is described in an adolescent male with antecedent meningomyelocele corrected by surgery, and ventriculo-peritoneal derivation. Four months before the occurrence of thrombosis, he presented with bilateral otitis media and mastoiditis, and was treated with antibiotic. Magnetic resonance images were not obtained before referral to our hospital. The patient received full anticoagulation and his clinical course was uneventful. He remains asymptomatic under outpatient surveillance till this report. The aim of reporting the case is to emphasize the role of otologic infections in the origin of intracranial thrombotic phenomena, and highlights the findings of magnetic resonance venography for characterization of intracranial sinus thrombosis.

Key words: Mastoiditis. Otitis media. Transverse sinus thrombosis. Magnetic resonance venography. Intracranial sinus thrombosis.

INTRODUCTION

Among adults, the incidence of cerebral venous sinus thrombosis (CVST) is 3-4 cases per million, and genetic or acquired prothrombotic states and infections constitute the main predisposing factors. Intracranial sinus thrombosis associated with otitis and mastoiditis are considered rare, and have been described predominantly among children from developing countries. Authors emphasize the need for better awareness about rising in frequency of these potentially lethal conditions, which often course with variable neurologic features. Suggestive data of CVST are intracranial hypertension, focal neurologic deficits, encephalopathy, and cavernous sinus syndrome. Diagnosis is based on clinical data and CT scanning images, but conclusion is obtained by catheter angiogram or magnetic resonance venography.

Case studies can enhance the suspicion index of CVST due to otomastoiditis, a probably under-detected condition, as described hereby.

CASE REPORT

A 14-year-old boy presented with intense occipital headache 2 months ago. Initially, the pain was aggravated by physical efforts only, but later it became continuous. Seven days before his admission to our hospital, there was vomiting and syncope, in addition to diplopia and right convergent squint. Antecedent events included bilateral otomastoiditis treated with oral antibiotic 4 months ago; congenital meningomyelocele corrected by surgery in the neonatal period; and ventriculo-peritoneal derivation to control chronic hydrocephalus. Findings of neurological examination were paresis of the right lateral rectus, bilateral papilloedema and discrete left inframacular retinal haemorrhage, without meningeal irritation signs.

Laboratory examinations, including cephalorachian liquid and blood tests for pro-thrombotic conditions showed normal results, and the hypothesis of CNS infection and thrombophilia were ruled out. Otorhinolaryngologic evaluation revealed bilateral low-grade otomastoiditis, and an intravenous course of ceftriaxone was given for 6 weeks. Images of cerebral angiography and magnetic resonance venography for characterization of intracranial sinus thrombosis.

Figure 1(A,B): A. (MR venography in sagittal view): Transverse sinus thrombosis with partial recanalization and stenosis of the rectum sinus adjacent to the torcular. B. (MR venography in coronal view): Bilateral transverse sinus thrombosis.
DISCUSSION

Although CVST associated with otomastoiditis is considered a rare condition, Bales and colleagues studied 13 children with otogenic intracranial sinus thrombosis and found cranial neuropathies and intracranial hypertension in the majority of them. Moreover, a retrospective study (2004-2007) of Croche Santander and colleagues about otitis media and its intracranial complications found 50% (4/8) of sigmoid sinus thrombosis.

This case study aims to emphasize the role of otomastoid infections causing TST in adolescents with long-standing central nervous system sequelae, and highlights the utility of imaging studies in the characterization of CVST diagnosis. Early diagnosis of TST could not be established before the hospitalization of the patient reported here due to the absence of neuroimaging studies. Misdiagnosis and under-diagnosis may occur because clinical features of CVST are variable or non-specific. This patient presented with neurologic features that led to diagnosis suspicion about CVST on admission, and cerebral imaging studies confirmed the clinical hypothesis. Although delayed diagnosis usually contributes to poor prognosis, the outcome was favourable in this patient following intravenous antibiotic and full anticoagulation. This male patient did not complain of headache, and TST was due to previous infection. Alonso-Cánovas et al. found TST in 11 individuals (73%) out of 15 Brazilian patients (75% females); predominant risk factors were oral contraception (40%) and thrombophilia (13%). Differing from our data, Christo et al. documented that headache occurred in 100% of the patients and was the single manifestation in one-third of them. Otherwise, full anticoagulation also contributed to better outcomes in 87% of cases. Jianu and colleagues evaluated 30 patients (mean age: 37.2 ± 8.6 years) with CVST in Romania. Ten individuals were males, otomastoiditis was found in 2 cases (6.6%), while aetiologic factors were unknown in 26.6% of cases. No case of TST was found, headache was frequent (73.3%), and mortality rate was high (16.7%). Similar to this case study, predominant evolution (66.7%) was sub-acute (1-4 weeks). Although infectious complications prevail in patients with otomastoiditis, CVST may also occur. Actually, extracranial complications are more frequently found after otomastoiditis, but severe intracranial complications play more important role in the morbidity and mortality. Better outcomes depend on early diagnosis and treatment, and imaging data are indispensable to confirm the diagnosis. Angiography in venous phase, magnetic resonance venography and angiography with digital subtraction are the most valuable tools to accurately characterize the diagnosis of CVST at the earliest phase.

In conclusion, CVST must be suspected in patients with otomastoiditis and atypical symptoms and in cases of secondary headaches with unknown etiology. Authors strongly believe that CVST has been underdiagnosed in developing areas because of its non-specific features, but mainly due to the lack of neuroimaging studies.

REFERENCES

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