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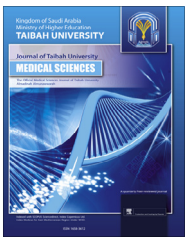

Clinical Study

Tumour-like presentation of central nervous system tuberculosis: A retrospective study in Kingdom of Saudi Arabia

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الملخص

أهداف البحث: يهدف البحث للتمييز بين درن الجهاز العصبي المركزي المتظاهر على هيئة شبية الورم وأورام الجهاز العصبي المركزي.

طرق البحث: أجريت هذه الدراسة الاستيعادية بمراجعة ملفات جميع حالات درن الجهاز العصبي المركزي في مدينة الملك عبد العزيز الطبية، جدة، في الفترة ما بين يناير 2002م ويناير 2012م. لم تظهر أعراض أو علامات للدرن الرئوي أو الدرن العام. من بين 125 مريضا مصابا بدرن الجهاز العصبي المركزي، ظهر 9 مرضى (7.2%) بخصائص سريرية وشعاعية توحي بورم في المخ.

النتائج: تم تشخيص التورم الدرني إما أثناء العملية الجراحية بواسطة المقاطع المجمدة (ثلاثة مرضى) أو بعد استئصال الورم جراحيا (ستة مرضى). شفي سبعة مرضى بعد الجراحة، بعد استخدام مضادات الدرن؛ بينما توفي مريض واحد، وأصيب آخر بعجز عصبي شديد.

الاستنتاجات: يماثل درن الجهاز العصبي المركزي الأورام الدماغية، ويجب أن يكون مؤشر الاشتباه عاليا، خاصة في المناطق الموبوءة. ينبغي أن تؤخذ خزعة من المرضى المصابين بدرن الجهاز العصبي المركزي الذين يحضرون بكتلة دماغية، لتفادي المراضة أو الموت من التدخل الجراحي غير الضروري. كما ينبغي زيادة استخدام الرنين المغناطيسي الطيفي في تقييم الأورام التي تحتل جزءا من المخ والجهاز العصبي المركزي. وغياب الأعراض الأساسية أو الرئوية للدرن يعتبر مضللا. هناك حاجة إلى الكثير من الدراسات الوبائية على الصعيد الوطني لوضع مبادئ توجيهية للتشخيص المبكر والنتائج الناجمة من هذه المشكلة الصحية الآخذة في الازدياد.

الكلمات المفتاحية: كتل المخ; ورم في المخ; كتلة دماغية; درن الجهاز العصبي المركزي

Abstract

Objective: To differentiate the tumour-like presentation of central nervous system (CNS) tuberculosis (TB) from CNS tumours.

Methods: We conducted a retrospective chart review of all cases of CNS TB seen at King Abdulaziz Medical City, Jeddah, between January 2002 and January 2012. No

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symptoms or signs of pulmonary or systemic TB were found. Of the 125 patients with CNS TB, 9 (7.2%) presented with clinical and radiological features suggestive of a brain tumour.

Results: A diagnosis of tuberculoma was established either intraoperatively in frozen sections (three patients) or postoperatively when the masses were resected (six patients). After surgery, seven patients recovered after receiving anti-TB treatment; one patient died, and another developed a severe neurological deficit.

Conclusion: CNS TB is a great mimicker of brain tumours, and the index of suspicion should be high, especially in endemic areas. A diagnosis is based on clinical presentation and the results of investigations. In patients with CNS TB that present with a mass lesion, a biopsy should be taken to avoid morbidity and mortality from an unnecessary surgical intervention.

Greater use should be made of magnetic resonance spectroscopy in the evaluation of brain space-occupying lesions, and CNS TB should be included in the differential diagnosis of such lesions in all areas endemic for TB. The absence of constitutional or pulmonary symptoms of TB is deceiving. More nationwide epidemiological studies are needed to establish guidelines for early detection and successful outcomes of this rising health problem.

Keywords: Brain space-occupying lesions; Brain tumour; Cerebral mass; CNS tuberculosis

Introduction

Although tuberculosis (TB) is a curable disease, it is the world's second commonest cause of death from infectious disease, the first being infection with human immune deficiency virus (HIV). The World Health Organization (WHO) estimated that nearly one third (1.9 billion people) of all the people in the world are infected with *Mycobacterium tuberculosis*, and it has probably killed more than 100 million people over the past 100 years.[1] It is endemic in most developing countries and is resurgent in countries with high rates of HIV infection.[2] In the Kingdom of Saudi Arabia, according to WHO, the incidence of smear-positive TB and deaths from TB each rose by 6.2% between 1990 and 2004.

Although 85% of cases of TB occur in the lungs, 15% occur outside the respiratory system, the central nervous system (CNS) being the second commonest site of involvement.[3] CNS TB accounts for approximately 1% of all of disease caused by *M. tuberculosis* and carries the worst prognosis of any other form.[4] Tuberculous meningitis, the commonest form of CNS TB, may result in hydrocephalus, brain infarction and death if left untreated.[4] CNS TB can present either as diffuse forms, such as basal exudative meningitis, or as localized forms, such as tuberculoma, abscess or cerebritis.

Tuberculomas are the commonest manifestation of parenchymal TB. They can occur at any age and can be solitary or multiple.[5] Tuberculomas may affect the brain (meningeal, parenchymal or ependymal), spinal cord, subarachnoid, subdural or epidural space. Cerebral tuberculomas can occur anywhere in the brain parenchyma but are usually located at the corticomedullary junction and periventricular region, as expected for haematogenous dissemination. In children, they predominate in the infratentorial compartment, whereas in adults, the supratentorial compartment is more commonly affected.[6] Rarely, they are found within the ventricle (the lateral ventricle being the commonest site), the cavernous sinus, the sella turcica, the hypophysis, the hypothalamus, the sphenoid sinus or mastoid air cells.[7] The frontal and parietal lobes are the most commonly affected regions, especially on the left, probably due to greater blood flow to the dominant hemisphere.[8] Tuberculomas arise when tubercles in the parenchyma of the brain enlarge without rupturing into the subarachnoid space. They usually occur in the absence of meningitis, but they may coexist because of extension of cerebrospinal fluid infection into the adjacent parenchyma via cortical veins or Virchow-Robin spaces.[9] Tuberculomas consist of epithelioid cells and giant cells mixed with lymphocytic inflammatory cells, forming a non-caseating granuloma. It subsequently develops a central area of caseating necrosis, which is initially solid and may liquefy later.

Patients usually present with headache, seizures, fever, focal neurological deficit and features of raised intracranial pressure. Infratentorial tuberculomas may present with brainstem syndromes, cerebellar symptoms and multiple cranial nerve palsy.[9,10] Clinical findings suggestive of extraneural TB are frequently subtle or absent, and fewer than 50% of patients have a history of TB. In patients with CNS tuberculoma, typical cerebrospinal fluid findings might be absent,[11] and immunological studies and adenosine deaminase are neither specific nor sensitive; culture and PCR are specific but not sensitive.

Tuberculomas can present as space-occupying lesions that are indistinguishable from brain neoplasms. Although cancer treatments are frequently toxic, the risk of toxic effects is justified by the potential gains in survival seen when the appropriate treatment is assigned to the right patient. The aim of the study reported here was to find signs to differentiate CNS tuberculomas from brain tumours by reviewing all cases seen at our institute over a 10-year period.

Materials and Methods

We conducted a retrospective chart review of all cases of CNS TB seen at the King Abdulaziz Medical City, Jeddah, between January 2002 and January 2012. A total of 125 patients were identified. While most presented with either tuberculous meningitis or tuberculoma, nine (7.2%) presented with clinical and radiological features suggestive of a brain tumour. A diagnosis was established either intraoperatively from frozen sections (three patients) or postoperatively when the masses were resected (six patients).

Results

No symptoms or signs of pulmonary or systemic TB were found. One patient died, and another patient developed a severe neurological deficit. The remaining patients recovered after receiving anti-TB treatment. None of the cases was tested