

TUBERCULOUS MENINGITIS IN CHILDHOOD: NEW ASPECTS OF NEUROLOGIC COMPLICATIONS

MENINGITE TUBERCULOSA NA INFÂNCIA: NOVOS ASPECTOS DAS COMPLICAÇÕES NEUROLÓGICAS

Monara Kedma Nunes¹, Diandra Martins e Silva¹, Fernanda Sousa¹, John Sousa¹, Lysnara Lial¹, Marcela Rodriguez de Freitas⁴, Marco Orsini², Valécia Carvalho¹, Kaline Rocha³, Silmar Teixeira³, Victor Hugo Bastos¹

ABSTRACT

Tuberculous Meningitis (TBM) is a severe manifestation of tuberculosis that represents 1% of the cases of infection by *Mycobacterium tuberculosis*. Children are among the other age groups the most affected and when present, HIV-1 is responsible for poorer prognosis. It was carried out a search on the databases of Pubmed, Lilacs and Scielo, looking for articles that approach the principals news aspects of neurologic complications caused by TBM. The literature cite as major neurologic findings the hydrocephalus in approximately 80% patients, meningeal irritation, coma, seizures, intracranial pressure signs, cranial nerve palsy, hemiparesis and disorders in the movement. Neurologic sequelae occur in up to 50% of survivors and early diagnosis is crucial to reduce the occurrence of major functional losses. In this way, discussions presenting more specific methods for TBM as well as better assessment of the signs and symptoms of the disease is necessary for a better prognosis and lower mortality rate of these patients.

Keyword: Neurology; hydrocephalus; tuberculous.

RESUMO

A meningite tuberculosa (MTB) é uma manifestação grave da tuberculose que representa 1% dos casos de infecção por *Mycobacterium tuberculosis*. As crianças estão as faixas etárias mais afetadas e quando presente, o HIV-1 é responsável pelo pior prognóstico. Foi realizada uma revisão de bancos de dados Pubmed, Lilacs e Scielo, à procura de artigos que abordem os principais aspectos das complicações neurológicas causadas pela MTB. Os principais achados neurológicos compreendem a hidrocefalia em aproximadamente 80% dos pacientes, irritação meníngea, coma, convulsões, sinais de pressão intracraniana, paralisia de nervo craniano, hemiparesia e distúrbios movimento. Sequelas neurológicas ocorrem em até 50% dos sobreviventes e o diagnóstico precoce é crucial para reduzir a ocorrência de perdas. Desta forma, as discussões apresentando métodos mais TBM, bem como uma melhor avaliação dos sinais e sintomas da doença é necessária para um melhor prognóstico e menor taxa de mortalidade desses pacientes.

Palavras-chave: Neurologia; hidrocefalia; Tuberculose.

¹Brain Mapping and Functionality Laboratory (LAMCEF), Piauí, Brazil.

²Professor do Programa de Mestrado em Urgência e Emergência Médica - Universidade Severino Sombra - Vassouras.

³Brain Mapping and Plasticity Laboratory (LAMPLACE/UFPI), Piauí, Brazil.

⁴Departamento de Neuropediatria - HUAP - UFF e Instituto Fernandes Figueira

Tuberculous Meningitis (TBM) is a severe manifestation of tuberculosis that represents 1% of the cases of infection by *Mycobacterium tuberculosis*.¹ The presence of nonspecific symptoms and difficult diagnosis makes this disease a powerful cause of important neurological disabilities in children from poor countries² where infection by virus of the Acquired Immune Deficiency Syndrome (HIV / AIDS) is more frequent. Children are among the other age groups, the most affected due to inability to contain primary pulmonary infection. When present, HIV-1 is responsible for poorer prognosis.³

The presence of *Mycobacterium tuberculosis* and HIV-1 are among the infections that cause significant morbidity of nervous system including cognitive, behavioral and mental health problems.⁴ In a cohort study with 185 pediatric patients with a mean age of 53.5 ± 44.9 months, it was observed abnormal radiological findings in 90% of patients, such as parenchymal infiltration in 24.9 %, mediastinal lymphadenopathy 19.5 %, miliary opacities in 13.5 %, pleural effusion in 1.1 %, and atelectasis in 1.1 %. The Cranial computerized tomography showed that 90.3% patients had hydrocephalus, the culture of *Mycobacterium tuberculosis* was positive in 13% and 1.6% had positive acid-fast bacilli in cerebrospinal fluid.⁵

The success of treatment will depend on how quickly to diagnose the disease. The most common symptom is a neck stiffness, but it is not always present in the first stage of the disease. Weight loss, fever, apathy and respiratory complications are early symptoms that are often not reported to physicians resulting in disease progression to advanced stages as coma, opisthotonos and death. The advanced tuberculous meningitis may show neurological signs such as meningeal irritation, coma, seizures, intracranial pressure signs, cranial nerve palsy, hemiparesis and disorders in the movement. These signals may also appear in the initial stage of the disease and does not depend on the genotype of the organism, co-infections with HIV-1 or BCG immunization status (*Bacillus Calmette-Guérin*)².

Hydrocephalus associated with tuberculous meningitis is present in 80% of cases of tuberculous menin-

gitis and may be or not of communicating origin.⁶ A case study of an Asian child, previously healthy 6-months, showed that after 7-10 days of fever, cough and intermittent vomiting was diagnosed with pneumonia and treated successfully. Days later returned to the emergency department with mild facial asymmetry, weakness in the upper left corner and an episode of sudden movements. Magnetic resonance imaging findings of the patient were consistent with a cardiovascular event and analysis of cerebrospinal fluid were positive for tuberculous meningitis. The patient received medical management against tuberculosis and two months later developed obstructive hydrocephalus.⁷ This complication often responds to medical therapy, but there are cases that require surgery.⁶

The natural history and clinical manifestations of tuberculosis are different in children and adults, and has a greater risk of progression to more severe forms reported in children.⁸ Thus, the TBM has a high rate of neurological complications and long-term sequelae. It is normally observed sequelae in 78.5% of patients, with 55% having cognitive impairment, 40% with motor deficit, 37% optic atrophy and 23% presenting cranial nerve palsy,⁹ which demonstrates that when the TBM is not diagnosed early, children can come to present severe motor deficits that limit their functionality.

Discussions about consequential neurologic complications of tuberculous meningitis has been justified by the high incidence of infection with *Mycobacterium tuberculosis* and the fact that the prognosis of this complication depends on the neurological status and time of start of treatment, being the risk of mortality higher in those with comorbidities and neurologic involvement on admission.¹⁰ Neurologic sequelae occur in up to 50% of survivors and early diagnosis is crucial to reduce the occurrence of major functional losses. Therefore, the presentation of more specific methods for TBM as well as better assessment of the signs and symptoms of the disease is necessary for a better prognosis and lower mortality rate of these patients.

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