Modifying Cerebrospinal Fluid Constants for the Tuberculous Etiology of a Meningitis Case

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Tuberculous meningitis is the most lethal form of Mycobacterium tuberculosis infection, with a high rate of neurological complications and sequelae. We present the case of a 6 years old child diagnosed with tuberculous meningitis based on epidemiological, clinical and biological data and who has rapidly developed neurological complications with persistent fever and headache for a long time. Under tuberculostatic, depletion and corticosteroid treatment, the evolution of the disease was slowly favorable.

Keywords: meningitis, tuberculous, tuberculostatic therapy, focal neurological disorders

Experimental part

We will detail the case of a male patient C.R., 6 years old, with no significant pathological personal history, presenting in our clinic by transfer from the Pediatric Hospital. Symptomatology reported by the patient and the consultation raises the suspicion of a meningitis, diagnosis confirmed by imaging and laboratory exploration. This study analyzes retrospectively data on symptomatology, paraclinical data, treatment, disease progression, possible complications of acute illness, as well as subsequent re-evaluations performed through hospital ambulatory.

Results and discussions

A 6-year-old male patient is presented to our clinic with the following symptoms: general influenced state, marked physical asthenia, fever (38.9 degrees C), intense headache, nausea, vomiting, inappetence.

The disease started about 4 days prior to admission through a painful abdominal syndrome, fever, nausea and vomiting. First, he presents to the pediatric emergency service, where he is evaluated for surgery. The consultation
excludes a specialized emergency or a need for operation, and abdominal ultrasound does not detect abnormalities. The next day, the patient installs cephalalgia accompanied by photophobia, and when performing the test for meningeal signs, he sketches off the back of his neck. Because the symptoms progressively worsen, the doctor in call in the Infectious Diseases Hospital is contacted, deciding the transfer in the clinic with suspicion of meningitis.

At admission, the clinical examination highlights an altered general condition, restlessness, fever (38° C), paleness, dehydration, multiple diffuse vulgar warts on the body, normal pulmonary and cardiac functions, depressed abdomen with diffuse sensitivity to deep palpation, physiological intestinal transit and urination, signs of meningeal contracture present (nuchal rigidity, Kernig I). Following detailed anamnesis, we find that the patient is from an area with high incidence of tuberculosis.

A lumbar puncture is urgently performed, showing clear cerebrospinal fluid, with 357 elements / mm³, 80% lymphocytes, 13% polymorphonuclear and 7% macrophages, low glycosylation, low chlorouracil. A pulmonary X-ray reveals intense bilateral perihilar interstitial infiltration. A CT examination of the skull and brain revealed no changes.

Following epidemiological data (the patient originates from an area with above average incidence of pulmonary TB), clinical changes in CSF and pulmonary lesions, suspicion of tuberculous meningitis arises and antibiotic, TB), clinical changes in CSF and pulmonary lesions, from an area with above average incidence of pulmonary tuberculosis DNA. In evolution, the patient’s condition remains influenced, with persistent fever and headache, refuses nutrition, abdominal pain persist. The clinical examination revealed congestive pharyngitis and tonsillar hypertrophy grade 2 (beta-hemolytic Streptococcus absent). Neurosurgical examination is required and based on clinical data and CT craniocerebral interpretation an emergency intervention is excluded at that time. A third lumbar puncture is performed, this time under Midazolam anesthesia, revealing clear CSF with 840 elements / mm³, 75% PMN, 22% lymphocytes, 3% macrophages, low glucorhagia and chlorochloride, and undetectable Mycobacterium tuberculosis DNA.

Other laboratory investigations reveal inflammatory biological syndrome, normocytic anemia, thrombocytosis, absent hemocultures after 7 days of incubation. A lingual rash revealed the presence of Candida albicans, and pulmonary radiographs revealed a bilateral hyaline adenopathy, <15mm diameter, as well as micronodular opacities with low intensity positioned in the right subclavicular area and in the right upper lobe.

After 6 weeks of tuberculostatic therapy and cerebral anti-edematous treatment, the patient has a good overall condition, with no neurological and neuropsychic phenomena, without fever (kept febrile for 4 weeks). It is recommended to perform a control lumbar puncture which showed clear CSF, 94 elements/mm³, 65% lymphocytes, normal chemistry and Mycobacterium tuberculosis DNA undetectable.

The only data that was decisive for establishing the diagnosis and evolution of the patient under tuberculostatic therapy were the biochemical data, the CSF, which were strongly modified (glycerohagia, chlorurochary, albinomarohia).

In practice, the bacteriological diagnosis is not helpful, because of a minimum of 21 days for the growth of bacteria on the Lowenstein-Jensen culture medium, and the CSF PCR is a sensitive method, but reserved only to the laboratories in the university or reference centers. However, in the CRL, there must be a minimum threshold of genetic material and the cost of the method is very high.

The patient whose case we presented survived due to the rapid establishment of the therapy, because the suspicion of BK etiology was based on only modified biochemical data. It is essential to recognize this pathology from the first 10 days of onset, because overcoming this term leads to mortality in most of the cases.

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Conclusions

In the case we presented, the clinical data and the epidemiological context of tuberculosis in the area from which the patient originated could have guided the diagnosis. The certainty of a diagnosis provided by PCR was not possible due to the small amount of genetic material at the CSF level.

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Particularity of the case: relatively sudden onset with rapid evolution of neurological and psychological impairment in a child without a history of heredocolateral tuberculosis but which originates from an endemic area for this pathology. Major residual behavioral disorders required repeated psychotherapy sessions.
Prognosis is a good one, considering family cooperation, good compliance with treatment, and full remittance of neurological deficits.

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