

Complicated encephalitis in pediatrics: a case report

Marília Freitas Santana 1*, Lara Moreira Ferreira 1, Gabriele Sousa Barbosa 1, Liane Carvalho de Brito de Souza 2, Carlos Eduardo Jucá 3, Washington Aspilicueta Pinto Filho 4

¹ Medical student, Federal University of Ceará, Ceará, CE, Brazil.

² Pain Clinic, Walter Cantídio University Hospital, Ceará, CE, Brazil.

³ Pediatric neurosurgery, Albert Sabin Children's Hospital, Ceará, CE, Brazil.

⁴ Anesthesiologist, Albert Sabin Children's Hospital, Fortaleza, CE, Brazil.

*Corresponding author: Marília Freitas Santana. Pau Brasil Street, 40, C – Parangaba, Fortaleza. Zip Code: 60720-740 - Ceara, CE, Brazil. Phone: +55 (85) 9 9265-2081. E-mail: mariliafreitassantana@alu.ufc.br.

Research Ethics Committee Approval (if necessary): Approved by the Hospital Infantil Albert Sabin Ethics Committee (#2.314.838).

Received on: Aug 17, 2021. Accepted on: Aug 25, 2021. Available online: Oct 26, 2021.

Abstract

Encephalitis is a potentially fatal inflammation of the brain parenchyma, of infectious or immunological etiology. This article is a case report of a 9-month-old child who evolved to death, demonstrating the difficulty in making the diagnosis, due to the symptoms of this disease being, in most cases, nonspecific and with several differential diagnoses.

Keywords: Encephalitis; Pediatric; Case Management.

Introduction

Encephalitis is an inflammation of the brain parenchyma. It is clinically manifested as fever, headache, confusion, hallucinations and seizures, besides another signs and symptoms. Worldwide data shows an incidence of 16:100000 [1]. Although uncommon, it is a potentially fatal disease with high mortality.

Its etiology may be infectious or immunological, and it has a lot of

several differential diagnosis, which makes the management of the patient difficult [2]. We intended to describe a case report that incurred in death in a shorter than usual period of time, along with the difficulties of diagnosing the etiology of the illness.

Case report

Through a medical report review, we describe a case report of a 9-month-old infant with previous history of coryza, cough and mild fever for 5 days.

The child was admitted at reanimation center with compromised general condition after sudden drowsiness followed by an episode of seizure. On the physical examination, his fontanelles were sunken, and he was with high cardiac frequency and low oxygen saturation. The patient was intubated

and it was administered sedatives. It was requested a Computed Tomography (Figure 1) and a lumbar puncture of the Cerebrospinal Fluid (CSF). The culture of CSF was negative, so was the bacterioscopy. Serum tests showed elevation of CPR (12 mg/L).

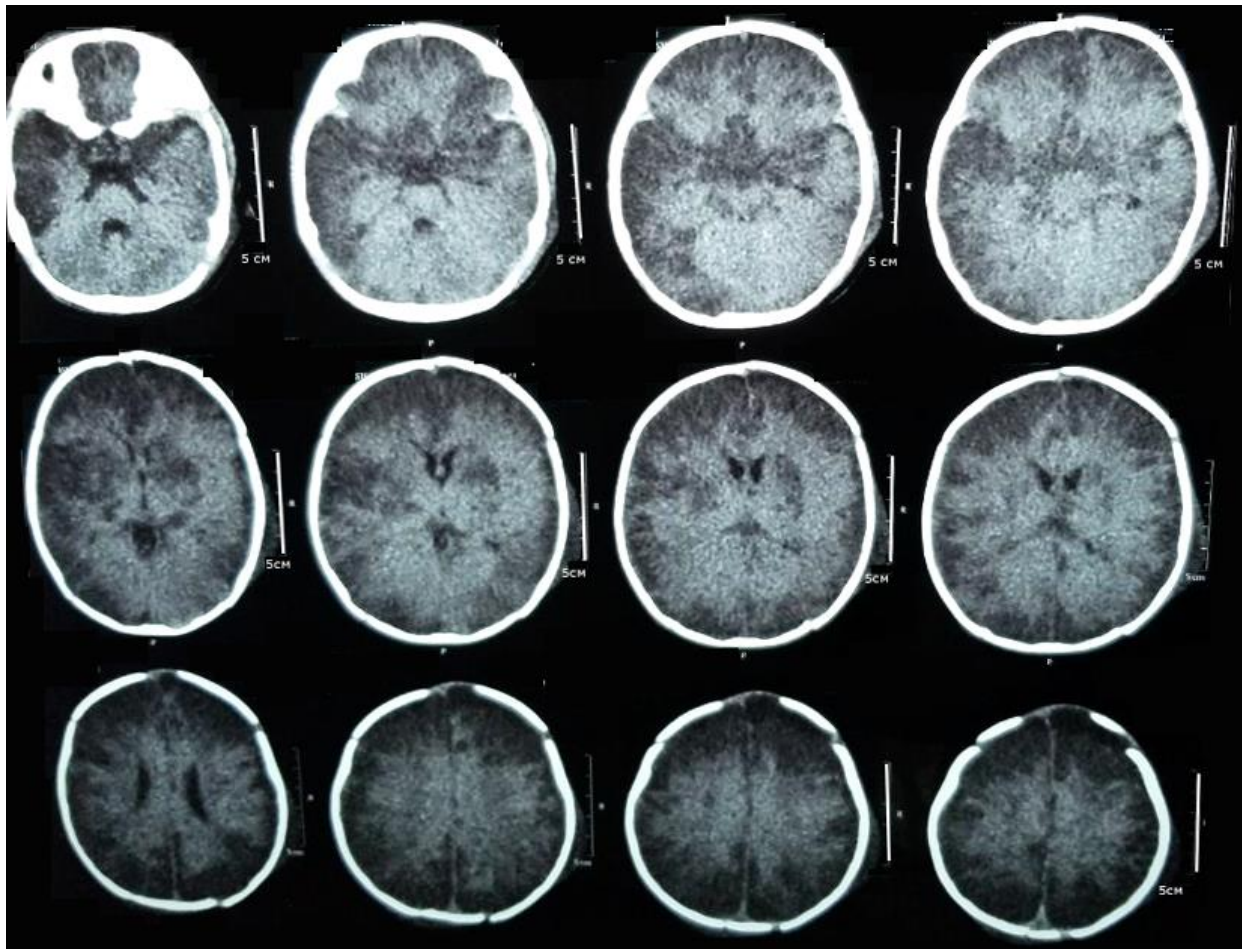


Figure 1. Computerized tomography of a 9-month-old infant diagnosed with Encephalitis.

Subsequently, treatment for the brain edema was implemented, and it was also administered intra-venous ceftriaxone and enteral acyclovir, as an empirical therapy. There were not

serological tests available in the hospital for Citomegalovirus (CMV), Herpes Simplex Virus (HSV), Measles, Coxsackie A and B, Respiratory Syncytial Virus (RSV), Parainfluenza,

Influenza A and B and Enterovirus. After 24 hours, the patient presented a new seizure episode. Hidantal and Phenytoin were administered. However, the seizures were reverted only hours later with administration of propofol through continuous infusion pump.

Three hours later, the patient presented signs of brain death and cardiovascular failure, evolving to irreversible cardiorespiratory arrest. The autopsy report showed diffuse cerebral edema and split hemorrhagic point in the brain.

Discussion and Conclusion

Nowadays, the majority of the encephalitis cases are viral, due to effective implementation of conjugated vaccines. Abundant quantity of cases has an etiology unknown. One of the reasons is unavailability of tests in some hospital centers. Therefore, without identification of the neurotropic agent or analysis of brain tissue, diagnosis of cases is often based upon clinical manifestations and treatment is empirical [1].

The majority of cases occur in infants, with 45.5% happening before the age of one-year-old in the United States [2]. Classically, children present with brief flu-like symptoms, followed by nausea, vomiting and headache. Usually, neurological symptoms such as altered consciousness and seizures take

days or weeks to happen. Focal neurological signs may also occur. Nevertheless, immunocompromised children may present with more subtle manifestations, such as low fever or speech and language disturbances [3].

Due to intense protection of blood-brain barrier and immune system, for the occurrence of encephalitis, it is necessary that individuals have some predisposing factors, such as Acquired Immunodeficiency Syndrome (AIDS). In regard to symptoms, fever, headache, focal neurological signs, acute episodes of seizures (24-72h), in addition to history of exposition to known risk factors (being inhabitant or having travelled to endemic areas, dog bites, exposition to insects or ticks) [3].

The main diagnosis criteria to encephalitis is altered mental status - defined as decreased or altered level of consciousness, lethargy or personality change, with duration of 24h or more and without an identified alternative cause. Besides, there are minor criteria that must be analyzed. They are: documented fever $> 38^{\circ}\text{C}$ in the 72h before or after presentation; generalized or partial seizures not totally due to a pre-existent convulsive disturbance; new onset of focal neurological findings; leukocytes count on the CSF equal or greater than $5/\text{mm}^3$; imaging showing brain parenchyma abnormalities; and Abnormality on electroencephalography

that is consistent with encephalitis and not attributable to another cause. The presence of 2 indicates possible encephalitis; ≥ 3 for probable or confirmed encephalitis [4].

In regard to treatment, initially, the main goal is supportive care and correction of electrolytes disturbances, autonomic deregulation, renal and hepatic dysfunction. In all cases, empirical treatment should be started, until the results of investigations are available to guide specific therapy. A large spectrum antibiotic must be started. In all cases of sporadic viral encephalitis, acyclovir must be given, as herpes simplex encephalitis is a treatable disease. The success of antiviral therapy depends on early institution of therapy [4-5]. It is important that establishment of treatment occurs promptly. Otherwise, severe and irreversible neurological complications may occur. This can lead to an increased time of hospitalization.

Intravenous antibiotic therapy is frequent at all ages, although infants under one year with the highest rates of antibiotic use. Antivirals use is also more common in this age group. However, antivirals therapy is way less used than antibiotics, while a small percentage of cases has a bacterial etiology [2].

An important differential diagnosis of encephalitis is meningitis.

Pathologically, both viral and non-viral invasions of the brain cause some degree of both meningeal and parenchymal inflammation, which makes the two overlapping syndromes. Thus, the term "meningoencephalitis" is preferred by many clinicians. Clinically, it is possible to differentiate the two by two patterns: it is called "encephalitis" when the illness is associated with prominent sensorial alterations; when meningeal irritation is prominent, the clinical syndrome is said to be "meningitis" [5].

References

- [1] Glaser CA, Honarmand S, Anderson LJ, Schnurr DP, Forghani B, Cossen CK, Schuster FL, Christie LJ, Tureen JH. Beyond viruses: clinical profiles and etiologies associated with encephalitis. *Clinical Infectious Diseases*. 2006;43(12):1565–77.
- [2] Hasbun R, Wootton SH, Rosenthal N, Balada-Llasat JM, Chung J, Duff S, Bozzette S, Zimmer L, Ginocchio CC. Epidemiology of meningitis and encephalitis in infants and children in the united states, 2011–2014. *Pediatric Infectious Disease Journal*. 2019;38(1):37–41.
- [3] Thompson C, Kneen R, Riordan A, Kelly D, Pollard AJ. Encephalitis in children. *Arch Dis Child*. 2012;97(2):150–61.

[4] Aneja S, Sharma S. Diagnosis and management of acute encephalitis in children. *Indian J Pediatr.* 2019;86(1):70–5.

[5] Kumar R. Understanding and managing acute encephalitis. *F1000Res.* 2020;9:60.

Conflict of interest: The author declares no conflicts of interest.

Acknowledgements: None.

Funding: None.

How to cite this article: Santana MF, Ferreira LM, Barbosa GS, Souza LCB, Jucá CE, Pinto-Filho WA. Complicated encephalitis in pediatrics: a case report. *Brazilian Journal of Case Reports.* 2021Jul-Sep;01(4):79-83.