EPIDEMIOLOGY AND ETIOLOGY OF ACUTE ENCEPHALITIS IN COSTARICAN CHILDREN: A TERTIARY HOSPITAL EXPERIENCE

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BACKGROUND

Acute encephalitis results in substantial morbidity and mortality worldwide. Specific etiologies are identified in <50% of cases. The epidemiology and etiology of children hospitalized at the only pediatric tertiary referral hospital in Costa Rica, with acute encephalitis, was analyzed.

METHODS

Prospective descriptive epidemiological study from March to October 2017. Case definition was defined according to the International Encephalitis Consortium.

RESULTS

- ❖ Forty patients were included. Average age at admission was 5 years; being children between 1-9 years the most affected (65,0%). 57,5% were male.
- ❖ Etiology was determined in 21 children (52.5%). Probable or confirmed viral etiology was identified in 6 cases (15.0%) and bacterial etiology in other 6 cases (15.0%). A possible etiology was identified in 7 cases (17.5%). Autoimmune encephalitis was diagnosed in 2 patients (5.0%).
- ❖ Enterovirus and *Streptococcus pneumoniae* were the most common confirmed agents. No cases of HSV were found.
- ❖ Despite extensive evaluation, the etiology of 19 cases (47.5%) remained unknown.

- ❖ Complications were seen in 26 (65.0%) patients; respiratory failure was the most common (70.0%), followed by status epilepticus (27.5%) and shock (27.5%). Nineteen children (47.5%) needed PICU support.
- ❖ Sequelae were reported in 18 (45.0%) patients, being the most common: hypoacusia/deafness and oromotor dysfunction.
- ❖ The mortality rate was 15.0% (6 cases); 3 caused by viral agents (Adenovirus, HHV-6, Enterovirus), 2 by bacterial agents (*S. pneumoniae*, *Hib*), and one of unknown etiology.

- ❖ Diffuse cerebral edema was the cause of death in all cases.

DISCUSSION

We found a high incidence of acute encephalitis in children in Costa Rica (3.6 cases per 100 000 children) and a high morbi-mortality rate both by viral agents and by bacterial agents, even in the absence of HSV encephalitis. Although we were able to recognize the etiology in the majority of cases, almost half remain unknown. Our report of fulminant cerebral edema (15.0%) is higher than literature reports.

CONCLUSIONS

Acute encephalitis in costarican children is associated with significant morbidity and mortality. Although viral etiology has been considered the most frequent cause of acute encephalitis, we found similar cases of viral and bacterial etiology. An early and aggressive antiviral, antibiotic and anti-edema treatment is suggested if acute encephalitis is suspected.

REFERENCES

- 1.Glaser CA et al; California Encephalitis Project, 1998-2000. In search of encephalitis etiologies: diagnostic challenges in the California Encephalitis Project, 1998-2000. Clin Infect Dis. 2003; 36: 731-42.
- 2.Venkatesan A et al; International Encephalitis Consortium. Case definitions, diagnostic algorithms, and priorities in encephalitis: Consensus statement of the international encephalitis consortium. Clin Infect Dis. 2013; 57: 1114-28.
- 3.Glaser CA et al. Beyond viruses: clinical profiles and etiologies associated with encephalitis. Clin Infect Dis 2006; 43: 1565-77.

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Table 1. Acute Encephalitis Etiology in the National Children Hospital "Dr. Carlos Sáenz Herrera", San José, Costa Rica: March - October 2017. (N= 40).

	Confirmed* n (%)	Probable n (%)	Possible n (%)	Total n (%)
Enterovirus	2 (5.0)	1 (2.5)	-	3 (7.5)
<i>Streptococcus pneumoniae</i>	2 (5.0)	1 (2.5)	-	3 (7.5)
<i>Listeria monocytogenes</i>	1 (2.5)	-	-	1 (2.5)
<i>Streptococcus constellatus</i>	1 (2.5)	-	-	1 (2.5)
<i>Haemophilus influenzae</i> type b	1 (2.5)	-	-	1 (2.5)
EBV	-	1 (2.5)	-	1 (2.5)
HHV-6	-	2 (5.0)	-	2 (5.0)
Adenovirus	-	-	5 (12.5)	5 (12.5)
SAMR	-	-	1 (2.5)	1 (2.5)
<i>Enterococcus faecium</i>	-	-	1 (2.5)	1 (2.5)

***Two confirmed etiology not included because it was an autoimmune etiology (NMDA Autoimmune Encephalitis).**