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Research Note

EVIDENCE OF ENTEROVIRUS 71 INFECTIONS IN BRAZIL

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Enterovirus 71 (EV71), was first described in 1974 by N. J. Schimidt et al. (1974. *J. Infect Dis., 129,* 304-309) from cases of central nervous system (CNS) diseases occuring in California. It is a picornavirus which has been associated with outbreaks of aseptic meningitis, encephalitis, hand-foot-and-mouth disease, and polio-like paralytic diseases with persistent or transient paralysis. To date, despite the significant variability of clinical and epidemiological manifestations there is a close antigenic similarity among the EV71 strains isolated in different countries (see a review by J. L. Melnick, 1984, *J. Infect. Dis., 6,* suppl 2: S387-390).

EV71 belongs to the group of nonpolio enteroviruses which can cause paralytic disease although flaccid paralysis is most often associated with poliovirus (MMWR Vol. 37: No. 6, 7, 1987).

Wild polioviruses, although decreasing in number, still represent an important public health problem in developing areas of the northeastern region of Brazil. Flaccid paralysis is a frequent clinical sign of suspected poliomyelitis.

In order to expand our knowledge of the viral aetiology of CNS diseases in Brazil we are undertaking the study of nonpolio enteroviruses which have been reported to be associated with neurological diseases.

Paired serum samples (S1 and S2) from 28 patients with suspected poliomyelitis with symptoms of acute flaccid paralysis or paresy, including 3 with facial paralysis, were examined. These patients were negative for poliovirus isolation (not shown).

Acute phase sera (S1) were obtained within the first 4 to 15 days after the onset of symptoms and the second sera 15 to 35 days later. All sera were tested for seroneutralizing antibodies against the 3 serotypes of polioviruses (P1 Mahoney; P2 MEF-1; P3 Saukett) and also against the prototype strain BrCr of EV71 (Kindly supplied by Dr Mark A. Palansch of the Centers of Disease Control, Georgia, USA).

No seroconversion was observed against any of the polioviruses although all sera showed neutralizing antibodies to all 3 serotypes indicating previous vaccination or natural infection.

Nine of the 28 paired sera (32.1%) were positive to EV71 (Table). Of these, 7 had neutralizing antibody titers between 1/4 to 1/32 in both, while 2 pairs (7.1% of the total and 22.2% of the positives) showed seroconversion to this virus.

To our knowledge, this is the first evidence of infection caused by EV71 in Brazil. Failure to demonstrate rises in antibody titers to poliovirus support the aetiological role of EV71 in these infections.

G. Nagy et al. (1982, *Arch. Virol., 71:* 217-227), studying an epidemic of EV71 in Hungary, found a significant rise in antibody levels only in 52 of 286 paired sera tested and also found that 66% of patients with positive virus isolation already had antibodies in the early phase of their illness which remained at a constant level thereafter. We observed a constant level of antibody titers in 6 of the 9 positive serum pairs while in one instance the S2 titer decreased.

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TABLE

Data related to the 9 patients with neutralizing antibodies to EV71

Patient	Age	Sex	Origin	Initial sign	Sequela after 60-90 days	S1 titer	S2 titer
DPS	3	M	Bahia	Flaccid paralysis	No	1/8	1/32[a]
ARC	5	F	Goias	Facial paralysis	NF[b]	1/32	1/32
SMC	5	F	Bahia	Flaccid paresy	No	1/8	1/32[a]
FSJ	7	M	Bahia	Flaccid paresy	Yes	1/8	1/8
GK	10	M	Distrito Federal	Flaccid paresy	Yes	1/8	1/8
EJR	11	M	Distrito Federal	Facial paralysis	Yes	1/4	1/4
LAA	11	F	Bahia	Facial paralysis	No	1/32	1/32
JLM	18	M	Piauí	Flaccid paralysis	No	1/8	< 1/4
JAC	28	M	Bahia	Flaccid paralysis	No	1/32	1/32

a: seroconversion; b: NF: not followed.

The clinical manifestations related to EV71 infections which were demonstrated by seroconversion, in this preliminary study, were polio-like flaccid paralysis or paresy. Facial paralysis has not been described as one of the EV71 manifestations. Since seroconversion was not detected in these cases, this findings will require further analysis.

Attempts to isolate and characterize at molecular level the Brazilian strain or strains of EV71 and to evaluate the prevalence of IgM neutralizing antibodies in patients with CNS involvement are underway.

The presence of neutralizing antibodies to EV71 in 32.1% of patients from 4 geographically distant regions indicates dissemination of this virus in Brazil. This dissemination gives rise to concern due to the inexistence of a vaccine that might be nescessary in such situation.

The role of nonpolio enteroviruses in paralytic or other CNS diseases must be taken into account in differential diagnosis.

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