

BRIEF COMMUNICATION

SABIN-RELATED POLIOVIRUS VACCINE STRAINS ISOLATED FROM TRANSVERSE MYELITIS CASES IN BRAZIL

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Polioviruses are known as the causative agents of poliomyelitis, a paralytic and some times fatal disease of humans. Although the attenuated strains developed by Dr. A. Sabin have been effectively used as an oral live vaccine to control the disease and the circulation of wild strains in Brazil⁶, rare paralytic poliomyelitis cases classified as vaccine-associated occur in Brazil^{7, 8, 9} and also in other countries^{16, 20}. The isolation of Sabin-derived strains in Brazil from cases classified as Guillain-Barré syndrome^{7, 9}, facial paralysis⁷ and transverse myelitis (TM)⁹, suggested that these paralysis could also be caused by Sabin-derived strains in certain cases. In the present study cases classified as TM in Brazil, and from which Sabin-related poliovirus strains were isolated were analysed.

Polioviruses were isolated from fecal samples and their relationship to the P1/Sabin, P2/Sabin or P3/Sabin strains was previously demonstrated by molecular hybridization and PCR⁶. As observed in table 1 in all these 3 TM cases analysed in Brazil, Sabin-related strains were isolated during the disease. In one case a 12-year-old boy received the last vaccine dose approximately 6 years before the onset of TM, and two P1/Sabin-related strains were isolated from stool; one strain was isolated 3 days after the onset of motor deficiency, while the second strain was isolated 5 days after the onset of motor deficiency. In the second case an 8-year-old boy received the last vaccine dose approximately 4 years before the onset of TM, and a P2/Sabin-related strain was isolated from stool 9 days after

the onset of motor deficiency. In the third case a 13-year-old boy received the last vaccine dose approximately 9 years before the onset of TM, and a P3/Sabin-related strain was isolated from stool 28 days after the onset of motor deficiency. All these three patients presented flacid paralysis with sequels in the right and left inferior members of the body.

The isolation of Sabin-related strains during TM (table 1), demonstrates a temporal association between the isolation of these strains and the disease. In all these 3 cases analyzed the last Sabin vaccine dose was given years before the onset of TM, suggesting a persistent infection or the transmission of Sabin-derived strains to the patients^{7, 8, 9}. Studies have demonstrated the capacity of Sabin-derived poliovirus strains to cause a persistent infection *in vitro*^{2, 17}. Other studies have demonstrated the capacity of a Theiler's virus strain, also a member of the *Picornaviridae* family, to cause a persistent infection in the central nervous system of mice, leading to demyelination¹⁴. This study supports the idea that poliovirus strains could also lead to demyelination of the CNS in certain cases.

A documented TM case was observed after vaccination with inactivated typhoid and cholera vaccines and with live oral polio vaccine⁴. In an other documented case, TM occurred after vaccination with diphtheria and tetanus toxoid and with live oral polio vaccine¹⁹. The previous observation of TM following vaccinations and infections caused by different viral

Table 1
Epidemiological data of TM cases from which Sabin-related strains were isolated.

Patient	Age	Origin /Year isolat.	Vaccination		Date of onset of motor deficiency	Collecting date of the sample	Isolated virus	t	Clinical background	
			Doses	N. Last dose						
R.B.S.	12 years	SE/90	yes	4	11/08/84	03/06/90	06/06/90 08/06/90	P1v (st) P1v (st)	6 years	TM (s)
V.L.S.S.	8 years	BA/90	yes	7	11/10/86	01/04/90	10/04/90 16/04/90	P2v (st) N	4 years	TM (s)
J. L. P. S.	13 years	BA/93	yes	8	11/08/84	12/01/93	10/02/93	P3v (st)	9 years	TM (s)

States of Brazil: BA = Bahia; SE = Sergipe

t = approximate time delay between the last vaccine dose and the isolation of Sabin-related strains.

P1v = P1/Sabin-related strain; P2v = P2/Sabin-related strain; P3v = P3/Sabin-related strain.

N = negative viral isolation in the second fecal sample.

(st) = strains isolated from stool.

(s) = sequels.

agents^{1, 3, 5, 10, 11, 12, 13, 15, 18}, strengthens previous suggestions⁹ that Sabin-related poliovirus strains can trigger TM in certain cases. Although the Sabin-related isolates may not be the etiological agent of the disease, this study suggests that infections caused by Sabin-derived strains can trigger TM in certain cases.

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