

# Paralytic Poliomyelitis and Non-Polio Enteroviruses in Saudi Arabia

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## Summary

Stool and blood samples from 74 Saudi children suspected of paralytic poliomyelitis were investigated for the aetiological agent of this disease. Poliovirus type 1 was the predominant isolate (61 per cent), followed by poliovirus type 3 (8 per cent) and poliovirus type 2 (5 per cent). Enteroviruses, other than polio were also isolated, viz. Echo 24, Coxsackie B<sub>2</sub>, and Coxsackie B<sub>3</sub> and one non-polio enterovirus. The results indicate that paralytic poliomyelitis is still endemic in Saudi Arabia and concentrated efforts must continue to sustain high immunization coverage against polioviruses, since these viruses remain the only agents that can be interrupted by immunization.

Paralytic poliomyelitis has been eradicated from the developed world, but is still endemic in many developing countries.<sup>1</sup> Recent studies have shown that infection with other members of the enterogroup can also cause paralysis which mimicks poliomyelitis.<sup>2-4</sup> It seems important, therefore, that the causative agent of this disease be correctly determined in order to prevent a possible epidemic of poliomyelitis and also to determine the success of an immunization policy against poliomyelitis since polioviruses remain the only agents that can be interrupted by immunization.

There is a lack of information on the extent of paralytic poliomyelitis in Saudi Arabia. In this paper we report on our 2 years' experience with this disease in Saudi Arabia and the significance of our findings.

Between January 1982 and January 1984, stool specimens from 74 children (6 months to 5 years, 76 per cent  $\geq 2$  years) suspected of paralytic poliomyelitis were sent to the Virology Laboratory at King Khalid University Hospital in Riyadh for virus isolation. Thirty specimens were from the Fever Hospital in Riyadh Central Province, and the rest were from King Fahd Hospital in Al-Hufuf and from Dammam Regional Laboratory in the Eastern Province. Blood samples as single specimens were sent on only 13 patients. The types of viruses isolated in tissue culture is shown in Table 1. Poliovirus type 1 was the predominant isolate (61 per cent) followed by poliovirus type 3 (8 per cent) and polio virus type 2 (5 per cent). Enteroviruses, other than polioviruses isolated were: Echo 24, Coxsackie B<sub>2</sub> and B<sub>3</sub> and one non-polio enterovirus. The non-polio isolate was considered as an enterovirus based on its characteristic cytopathic effect and on its morphology on electron microscopy. Blood from 11 patients showed high neutralizing anti-

TABLE I  
Viruses isolated in suspected cases of poliomyelitis in Saudi Arabia

Virus isolated	No. of cases
Polio 1	45
Polio 2	4
Polio 3	6
Echo 24*	1
Cox B <sub>2</sub>	1
Cox B <sub>3</sub>	1
Non-polioentero	1
No virus isolated	15
Total	74

\* Identification was done by the Centers for Disease Control (CDC), Atlanta, Georgia.

body titres to the isolated virus ( $\geq 256$ ). All poliovirus isolates were found to be wild-type viruses in the temperature marker test.<sup>5</sup> No virus could be isolated in 15 (20 per cent) stool specimens. Unfortunately, we were not able to carry out inoculation of newborn mice during the period of our study, which hampered our ability to isolate Coxsackieviruses group A.

History of vaccination was only available on the 30 patients from Fever Hospital. It was quite disturbing to see that five (17 per cent) of the patients received three doses while eight (27 per cent) received at least one dose of the Sabin oral polio vaccine. The failure to protect against poliomyelitis in these cases could be because the vaccine lost its potency due to improper storage and handling which is a serious problem in

tropical and subtropical countries.<sup>6</sup> Other possibilities include interference by enteroviruses in the gut at the time of immunization, simultaneous breast feeds, or malnutrition.

Polioviruses are the only agents than can be eradicated by immunization. In order to create a basis for a country-wide effective vaccination program in Saudi Arabia, a Royal Decree was issued in April 1979 by which a birth certificate for the newly born will not be given to the parents until after three primary doses of the vaccine (DPT and polio) are completed—the first does is given at 3 months of age, and three doses, 1 month apart, are given by 6 months of age. One booster dose is also given 1 year after the last dose of the primary course.

Poliomyelitis still poses a serious public health problem in Saudi Arabia. It is estimated that between 150 and 200 cases of poliomyelitis occur every year. No doubt that the Royal Decree will continue to have a great impact on the reduction of poliomyelitis, but concentrated efforts must continue to secure and sustain high immunization coverage. Furthermore, studies are needed to assess the true effectiveness of oral poliovaccine in Saudi children and whether current immunization policies such as the time interval between doses and the type of vaccine should be modified.<sup>7,8</sup> It must be added that poliomyelitis is also endemic in neighbouring countries.<sup>9,10</sup> Perhaps collaborative work and possibly a unified immunization policy among these countries could have a more pronounced effect on the eradication of poliomyelitis in this part of the world.

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