Seroprevalence of Antibodies after Vaccination against Poliomyelitis

A. M. Abanamy, Y. Y. Al Mazro

After six cases of paralytic disease were reported in the southern region of Saudi Arabia an investigation was conducted to evaluate the prevalence of poliomyelitis in normal vaccinated children. The seroprevalence of antibodies against poliomyelitis was determined in two regions: The children studied were selected randomly.

The cytopathic effect (CPE) neutralization test was used to determine the antibody levels and the overall seropositive rates in both regions for poliomyelitis 0.1, 0.2 and 0.3 were 76.6%, 84.4%, and 84.4% respectively. Although this phenomenon of low or absent antibody levels is common in developing countries, further investigations are needed to identify the possible causes.

Poliomyelitis is a highly infectious disease against which vaccination is the only effective method of prevention.1,2 Despite a high coverage with the oral vaccine, some outbreaks have been reported in some developing countries.

Six cases with paralytic disease were reported in Giza in the south part of the kingdom of Saudi Arabia. These cases were suspected to be due to poliomyelitis. All patients in the reported cases had been vaccinated. One of the basic steps in investigating such a situation is to conduct a survey to determine the seroprevalence of antibodies against poliomyelitis after vaccination. In view of the results further analytical studies or trials can be conducted to clarify the problem.

Six cases with paralytic disease were reported in Giza in the southern part of the kingdom of Saudi Arabia. These cases were suspected to be due to poliomyelitis. All patients in the reported cases had been vaccinated. One of the basic steps in investigating such a situation is to conduct a survey to determine the seroprevalence of antibodies against poliomyelitis after vaccination. In view of the results further analytical studies or trials can be conducted to clarify the problem.

Two regions were selected, Najran which has a similar environmental background to Giza (where the paralytic cases were reported) and Al Gassem in the central region.

No cases of poliomyelitis were reported from these two areas during the year 1989.

Methods

In this preliminary study 72 children were selected from the Najran and Al Gassem areas and 3 ml of blood was
collected in a plain tube at the age of 6-12 months after completing the first three doses of oral poliomyelitis vaccine (OPV) at the ages of 3, 4 and 5 months. The serum was separated and sent to the laboratory where serial doubling dilutions were prepared. Three sets of each dilution were prepared and the cytopathic effect (CPE) neutralization method (CDC protocol) was used to evaluate them.

To produce enhanced seroconversion, some modifications in the poliomyelitis vaccination programme have been tried. Increasing the number of doses of OPV was suggested and tried in certain parts of India. In other countries a combination of live and inactivated polio vaccine was used to decrease the annual incidence of paralytic poliomyelitis.