Outside Europe

Control of poliomyelitis by pulse immunisation in Vellore, India

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Abstract

In a simple study into the control of polio in the Third World a town was divided into 16 zones and pulses of oral polio vaccine given at one station in each zone, after extensive publicity about the campaign. Some 62% of children received three doses of the vaccine and the incidence of polio fell dramatically over the study period.

It is suggested that this method is applicable to similar communities because it is cheap, effective, and able to be extended to unimmunised communities when resources allow.

Introduction

Paralytic poliomyelitis is a major public health problem in many developing countries. In India alone over 500 children become paralysed each day because of polio.[1] A nationwide synchronised vaccination programme with two doses of oral polio vaccine two months apart for all children under 5 years has been recommended to control polio in developing countries.[2] In India about 140 million doses of oral polio vaccine would have to be distributed every year in a colossal vertical programme. We recommend a simpler and more practical strategy of using the presently available amount of vaccine to establish control in selected areas. The control zones would be expanded each year until the entire nation was covered.[3] The campaign would be part of the immunisation programme of local health authorities, thus strengthening the primary health care system, and could begin in any community even as small as a village.[4]

Poliomyelitis has been controlled in Vellore town by this method of pulse immunisation, and we report our results to encourage the use of pulse immunisation for polio control in other communities in developing countries.

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Vaccination programme

Vellore is a town of 174 000 (1981 census) inhabitants in Tamilnadu State in southern India. A local polio surveillance system was established in January 1980. All reported cases were seen by the study physician to confirm the clinical diagnosis, to collect faecal samples for virology, and to verify the place of residence of the child before the onset of the illness. Uninterrupted surveillance is continuing.

The town was divided into 16 zones and oral polio vaccine was administered at one station in each zone in a three-dose campaign at monthly intervals at the end of 1981. Publicity was given through slide presentation in cinemas, newspaper announcements, and the wide distribution of hand bills. Each campaign lasted four half-days with four stations operating simultaneously. Because this was the first year of pulse immunisation children from 0 to 4 years were eligible for vaccination. In February 1982 a 30-cluster sample survey was conducted to assess vaccination source and coverage, using a WHO recommended method.

Results

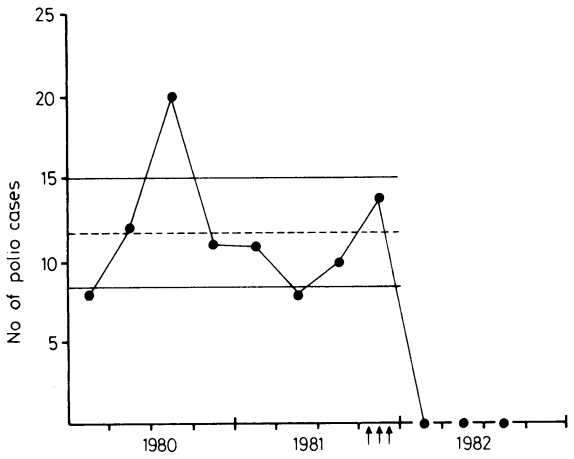
At the first pulse campaign in September 1981 only 2465 children were vaccinated, as the publicity hand bills had not been distributed. The campaign was rescheduled for October, November, and December, when 5592, 6298, and 6976 children respectively were vaccinated. Altogether 21 341 doses were given. In November measles vaccine was also given to children from 1 to 4 years.

In the cluster-sample survey 84% of 1 to 2-year-old children had received at least one dose of oral polio vaccine, 73% had received two doses, 62% three doses, 18% four doses, and 11% five doses. Of all the doses accounted for, 40% had been given through the pulse campaign and 60% through hospitals or private practitioners over a long period.

In 1980 and 1981, 51 and 43 children respectively had clinically confirmed acute paralytic poliomyelitis reported through the surveillance system (figure). From the 1980-1 data, assuming they follow a Poisson distribution and ignoring seasonality, the fall in the number of cases was highly significant ($p < 0.001$). During the first three quarters of 1982 no cases have been reported.

Comment

The reduction in the incidence of reported poliomyelitis was as gratifying as it was dramatic; 62% of children were given three doses of oral polio vaccine. In many developing countries



Quarterly number of reported cases of paralytic poliomyelitis. The horizontal lines represent the mean and 95% confidence limits of the mean number of cases per quarter. The three vertical arrows represent pulse vaccination with oral polio vaccine.

polio has not been controlled by regular age-specific immunisation through fixed centres, even in towns with over 60% coverage with three doses. Control was achieved in this campaign as a result of the wild polioviruses in circulation being replaced by the widespread pulse of vaccine viruses.[5] Pulse immunisation will increase the coverage rate as well as the seroconversion rate, presumably owing to the circulation of vaccine viruses.[4] Thus some children who were missed in the pulse campaign may also become immunised. As a result the circulation of wild polioviruses would be interrupted and the incidence of poliomyelitis in the community would fall.[4 5]

This study shows that polio can be controlled in small geographical units. As more resources become available the area covered can be increased until the whole nation achieves control over polio.

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Clinical Topics

Development and operation of a pharmacy-based intravenous cytotoxic reconstitution service

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Abstract

An intravenous cytotoxic reconstitution service has proved extremely popular with both medical and nursing staff. Since the pharmacy has taken over the responsibility for presenting these medicines in a readily usable form, many potential hazards to inexperienced medical staff have been eliminated, and much time and money have been saved. The pharmacists are in an excellent position to offer advice on many aspects of cytotoxic treatment and are well equipped to spot prescription errors. They are often asked to supply information concerning rates and methods of administration as well as compatibility data of different diluents with various cytotoxic agents. The eventual objective of the service is to provide reconstituted cytotoxic drugs for all patients in the pharmaceutical district receiving chemotherapy. As it is not practical to have pharmacists available 24 hours a day, some form of batch production of syringe-loaded drugs could be used. In the immediate future the practicality of storing syringe-loaded drugs in a deep freeze (at −20°C) with rapid thawing will be considered.

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Introduction

The past 20 years has seen an explosion in the introduction of effective cytotoxic agents for treating malignant disease (fig 1). Not only has the number of agents increased, so has the frequency with which they are used.

Until relatively recently chemotherapy tended to be used only in specialised units on small numbers of patients with rare tumours. With the growth of chemotherapy as an adjuvant to surgery and radiotherapy, however, and with the advent of multicentre clinical trials in common malignancies, these drugs are now prescribed much more widely. This increased use may produce an unduly heavy burden on medical and pharmaceutical