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An Outbreak of Poliomyelitis in the Marathwada Region of Maharashtra State: 1990

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Paralytic poliomyelitis continues to be a

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public health problem in India. Lack of high and sustained immunization coverage in the susceptible population leads to increased endemicity or periodic outbreaks.

One such outbreak in the Marathwada region (comprising 7 districts) of Maharashtra state in June 1990 was investigated by the Enterovirus Research Centre, Bombay. This was the second outbreak in this region since 1986(1). Epidemiological observations from the investigation are presented here.

Material and Methods

During the field investigations, detailed district-wise data of the outbreak, and data from the preceding 4 years as reported by the District Health Officers to the Deputy Director of Health Services, Aurangabad were obtained.

Stool samples were obtained from 52,

BRIEF REPORTS

and blood samples from 39, clinically diagnosed cases of poliomyelitis in the acute/early convalescent phase of illness.

Viruses from stool samples were isolated on HEp2 cells grown in milk dilution bottles. The identification of viruses was carried out by microtiter neutralization technique using HEp2 cells(2). Sera were tested for neutralizing antibodies to polioviruses on HEp2 cells using microtiter technique(2). One hundred Tissue Culture Infective Dose of the specific attenuated viruses were used in the serum neutralization test.

Results

In the 10 month period from January to October 1990, 355 cases of poliomyelitis were recorded of which 300 cases (84.5%) were recorded in June and July. The overall incidence/100,000 population for the region in the 10 month period was 3.1. Although the outbreak involved all 7 districts, the extent of morbidity varied from district to district (Table I).

The details of age-wise distribution of

355 cases are given in Table II. It was observed that in 6 out of 7 districts the proportion of cases below 1 year of age was less than that between 1 to 2 years (Table I).

One hundred thirty nine children (39.1%) were unimmunized, 108 (30.4%) were inadequately immunized and 84 (23.7%) were fully immunized with 3 doses of OPV. Immunization status of 24 children (6.8%) was unknown. Among the 112 infants, 55 (49.1%) were unimmunized, 41 (36.6%) were inadequately immunized, 10 (8.9%) were fully immunized and in 6 (5.4%), the immunization status was unknown.

In the 52 stool specimen, poliovirus type 1 was isolated from 23 cases (44.2%), poliovirus type 2 from 1 case (1.9%), poliovirus type 3 from 1 case (1.9%), and "non-polio" enteroviruses from 7 cases (13.5%); 20 (38.5%) cases were "negative" for virus isolation. The geometric mean of the neutralizing antibody titer for poliovirus types 1, 2 and 3 of 38 sera was 130.35, 8.76, and 4.54, respectively.

TABLE I—District-Wise Incidence and Proportion of Cases of Poliomyelitis Below 2 Years of Age in the Marathwada Region: 1990

District	Number of cases	Incidence*	Proportion of cases(%)	
			Upto 1 yr	>1-2 yr
Aurangabad	55	2.9	23.6	41.8
Beed	59	3.8	27.1	55.9
Jalna	45	3.8	37.7	42.2
Latur	79	5.6	32.9	45.7
Nanded	27	1.3	33.3	37.0
Osmanabad	23	1.9	8.7	56.5
Parbhani	67	3.4	43.2	41.7

* Per 100,000 population.

TABLE II—*Age-Wise Distribution of Cases of Poliomyelitis in the Marathwada Region : 1990*

Age group (mo)	Number of cases	Percentage
0- 3	3	0.8
4- 6	16	4.5
7-12	93	26.2
13-18	79	22.3
19-24	83	23.4
25-30	12	3.4
31-36	35	9.8
37-48	18	5.1
49-60	11	3.1
>60	5	1.4
Total	355	100.0

Discussion

Large outbreaks of an infectious disease are usually followed by a period of low morbidity, mainly due to the "consumption" and the subsequent "building up" of susceptible individuals. After experiencing a large outbreak in 1986(1), the region of Marathwada expectedly went through a 3 year period of low morbidity before the outbreak in 1990.

However, some distinct qualitative differences were observed between the two outbreaks. The magnitude of morbidity was markedly less (355 cases and an incidence of 3.1/100,00 population in 1990; 1092 cases and incidence of 9.8 in 1986).

Infants accounted for 31.5% of the cases in 1990 and 43% in 1986(1). The relative higher proportion of cases in older children in 1990 suggest a subtle age shift associated

with improving immunization coverage. Such a shift has also been observed in Bombay, where the immunization coverage has improved in recent years(3).

The immunization status (against poliomyelitis) of cases, in the two outbreaks was also markedly different with 55.3% unimmunized 27.7% inadequately immunized, and 17% fully immunized in the 1986 outbreak(1).

The lower magnitude of morbidity, lower proportion of cases in infants, and lower proportion of unimmunized cases in 1990, indicate an improved immunization coverage. However, the observation that among the infants 49.1% were not immunized and 36.6% inadequately immunized, suggests that the level of immunization coverage is not yet high enough to prevent outbreaks.

Poliovirus type 1 predominated in this outbreak. This was corroborated by antibody pattern. Poliovirus type 1 is known for greater morbidity in India and elsewhere(1,3-5,6) and it also caused the previous outbreak in 1986(1). "Non-polio" viruses have been incriminated in polio-like illness(7). Their role in the etiology of polio-like illness needs to be critically ascertained as they are likely to gain importance as poliomyelitis gets controlled(7).

The main factor in the outbreak was failure to vaccinate or to complete the schedule of 3 doses of oral polio vaccine in a large number of children rather than vaccine failure. To avert such outbreaks in future the immunization coverage levels need to be rapidly brought up and sustained at least 85%.

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Nutritional Status, Social Awareness and Attitude Towards Marriage of Adolescents in a Tribal ICDS Block of Himachal Pradesh

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Adolescence is an important phase of child growth and development. While pursuing different child development services,

the adolescent phase has generally been totally neglected. Healthy adolescents apart from developing into healthy adults and parents can also play a key role in social and health education of their younger siblings and uneducated parents. Since there is paucity of information in general(1) and none from Himachal Pradesh on rural adolescent children, the present study was undertaken to evaluate the nutritional and educational status, social awareness and attitudes towards marriage and child bearing in adolescents (11-18 years) of a tribal ICDS block.

Material and Methods

The three villages, Rispa, Namgia and Shilling situated at a height of 10,000 to 11,000 feet above sea level were surveyed by a team of doctors from Pediatrics Department, Indira Gandhi Medical College, Shimla in June, 1991. The sampling design, frame and methodology of the study

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