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TECHNICAL DISCUSSIONS - POLIOMYELITIS

POLIOMYELITIS IN TUNISIA
in connexion with a recent epidemic

by

Dr. B. Hamza
Chief of the Paediatric Service
Charles Nicolle Hospital, Tunis

HISTORY OF POLIOMYELITIS IN TUNISIA

Poliomyelitis in its paralytic form was an uncommon disease in Tunisia. The first reports on this disease date from 1947; since then, sporadic cases have occurred every year, and the disease has never assumed an epidemic character. Although this disease is compulsorily notifiable, the official statistics do not exactly reflect its incidence.

In the Paediatric Service under our direction, 232 cases of paralytic poliomyelitis were recorded, between October 1959 and November 1960, i.e. in the course of fifteen months.

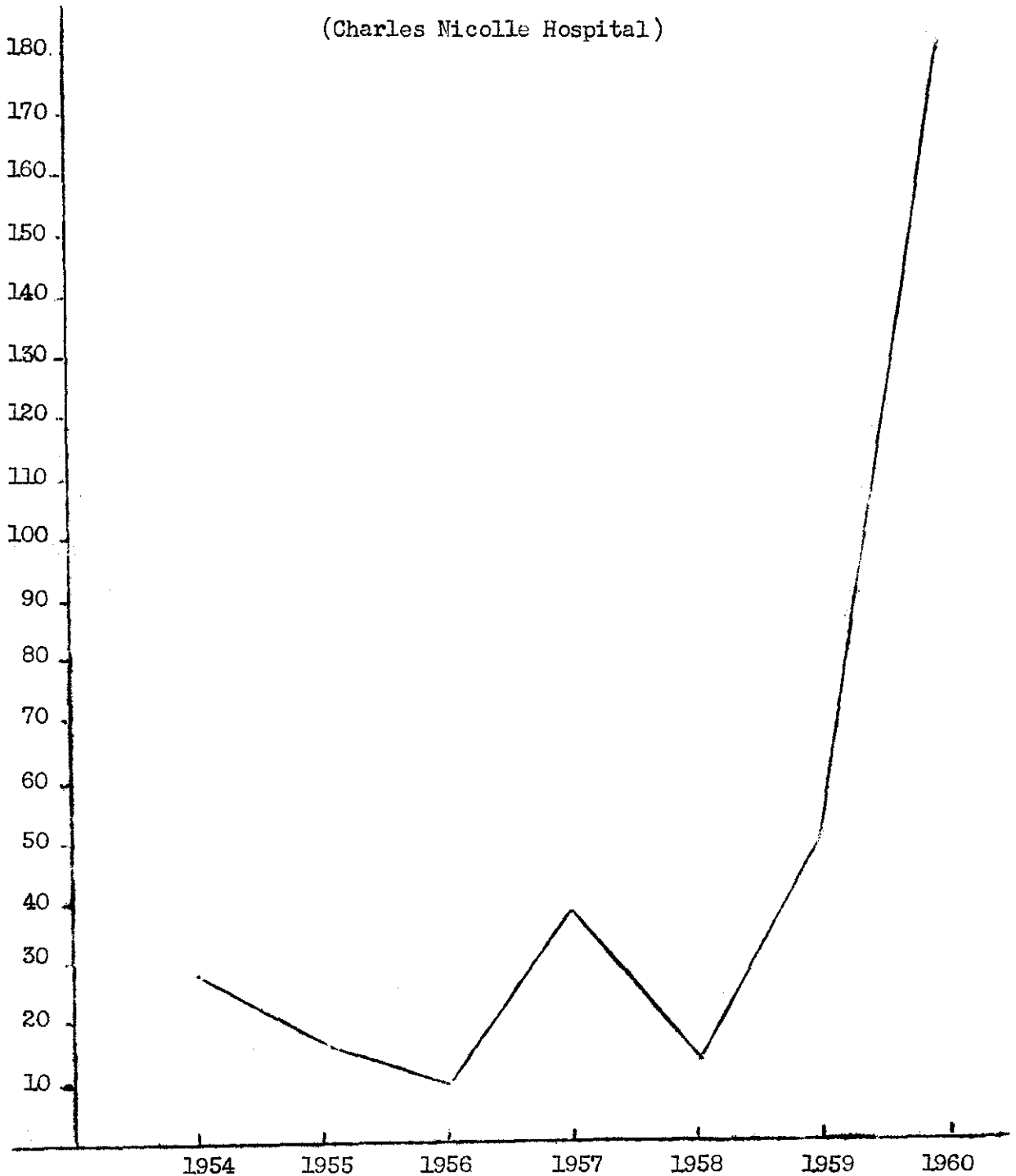
Out of these 232 cases, 105 were admitted to hospital, as they came at the acute phase of the disease; the remaining 127 cases came at the sequelae phase and were followed up at the rehabilitation centre belonging to the same Service.

Never before had such a high morbidity rate been recorded in this Service.

Considering that the number of poliomyelitis cases throughout the whole Tunisian territory may be, at least, estimated at approximately twice as many as the number recorded in our Service, the proportion of poliomyelitis cases would be 10 per 100 000 inhabitants. This rate would be even higher, if related to the young population of this country. Moreover investigations

rapidly carried out with some of our colleagues working in various hospital services confirmed that a flare-up of the disease occurred during the same period. Therefore to refer to it as an epidemic is fully justified.

DISTRIBUTION OF A.A.P.
OVER THE YEARS 1954 - 1960
(Charles Nicolle Hospital)



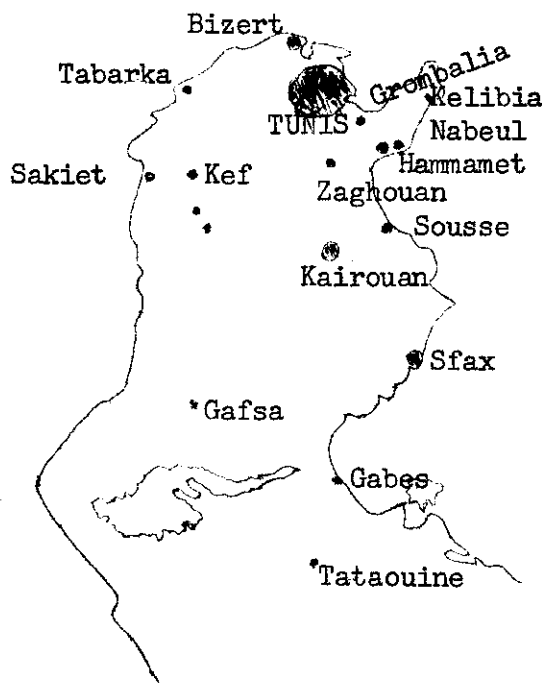
This curve represents the incidence of the disease as from 1955. A marked increase may be noticed at the end of 1959 and throughout 1960.

GEOGRAPHICAL DISTRIBUTION

Whilst the disease was particularly frequent in the city of Tunis and its suburbs, it reached many other Tunisian towns also, with perhaps some predilection for certain coastal towns. Besides the fact that patients living in the coastal area and the centre of the country perhaps shift more easily to the capital, it was noticed that, next to Tunis and its outskirts, the most affected towns were Kairouan, Sousse, Sfax, and the population centres of Cap-Bon peninsula.

Poliomyelitis cases were referred to us from the farthest south of the country, from towns situated on the Algerian/Tunisian border. As far as we know, Algeria experienced no epidemics during this same period.

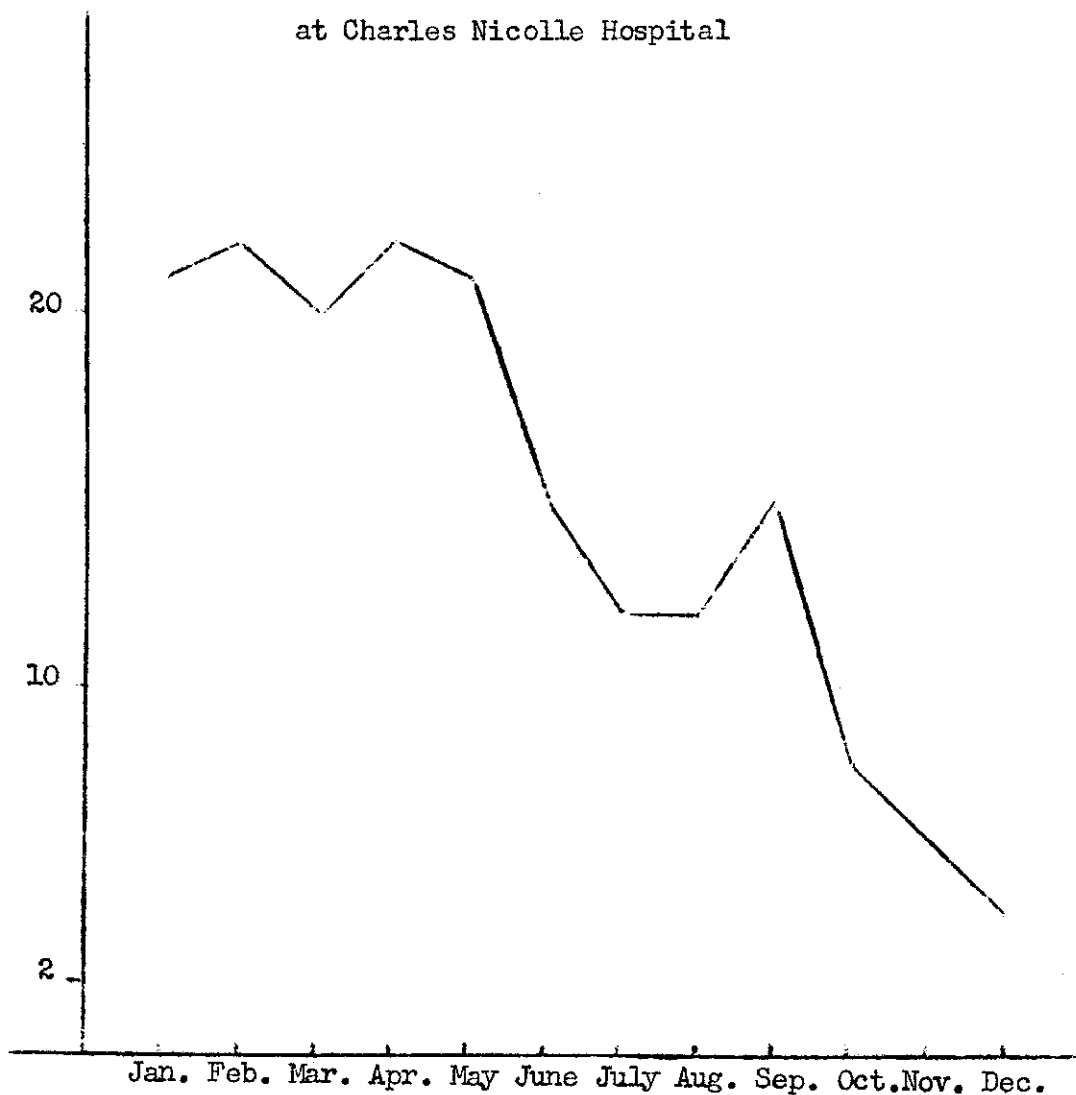
DISTRIBUTION OF POLIOMYELITIS CASES
October 1959 - December 1960



Tunis is the most severely affected, then come Kairouan and the coastal towns.

If we consider the seasonal character of this epidemic we may notice a prevalence during the fall and the winter. The disease had started by the end of September and most cases were reported during January, February, and March. This seasonal character is unusual, particularly as the cases recorded in previous years were observed during the summer and fall period.

MONTHLY INCIDENCE OF A.A.P. in 1960
at Charles Nicolle Hospital



AGE DISTRIBUTION

The disease mostly affected young children and particularly infants.

Out of the 232 cases:

48 were under one year

113 were between one and two years

44 were between two and three years

15 were between three and four years

5 were between four and five years

4 were between five and six years

3 were between six and seven years

Among the infants, the most affected were those of 18 months and 2 years:

4 were under three months

6 were between three and six months

19 were between six and nine months

27 were between nine and twelve months

18 were between twelve and fifteen months

40 were between fifteen and eighteen months

? were between eighteen and twenty-one months

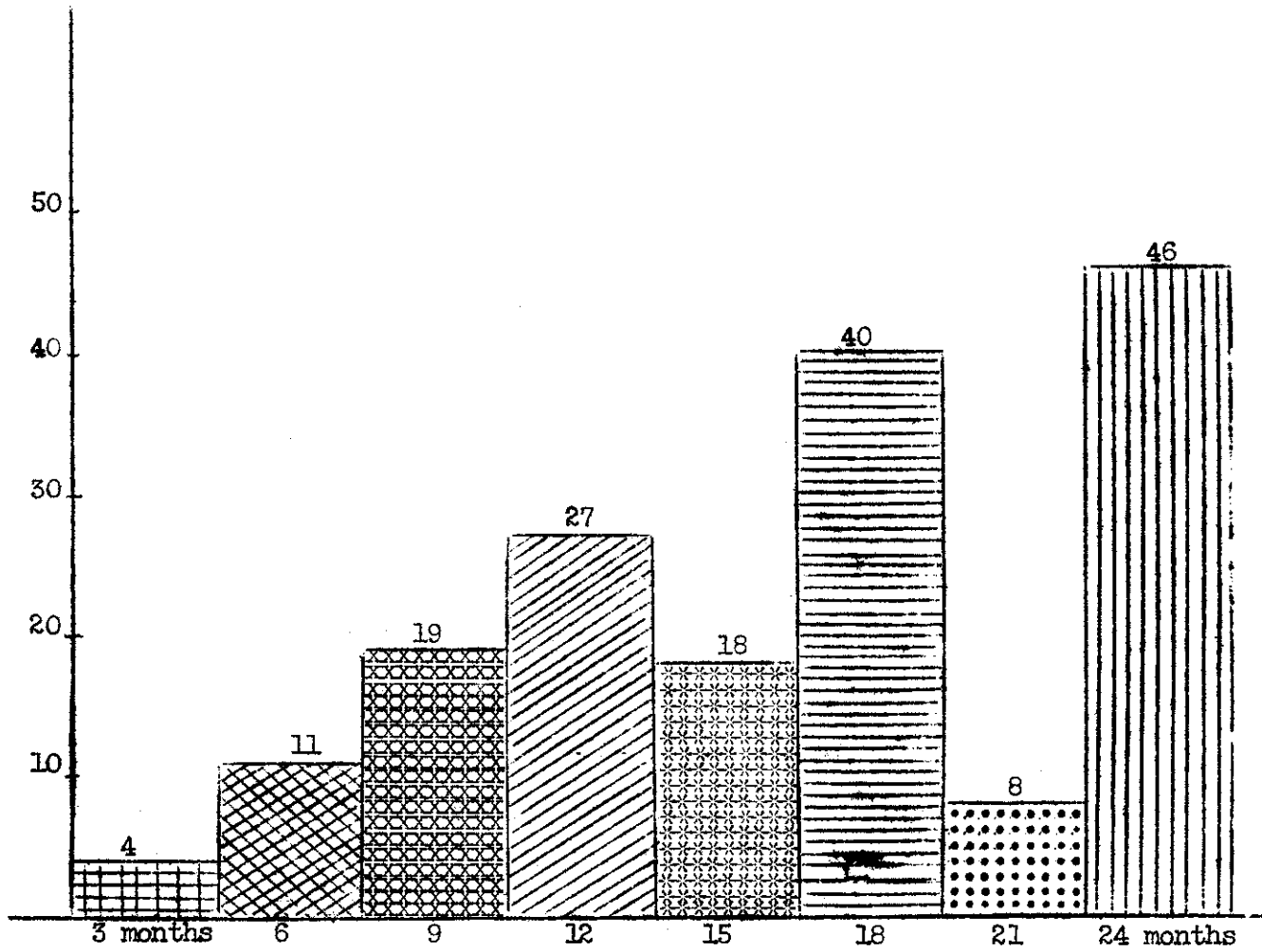
46 were between twenty-one and twenty-four months

Out of the 232 cases, 205 affected infants under three years. i.e. a percentage of 88.3%.

It is a well-known fact, which we have already reported in a previous study covering the years 1954 to June 1959, that 85.6% of the cases occurred in infants under three years of age.

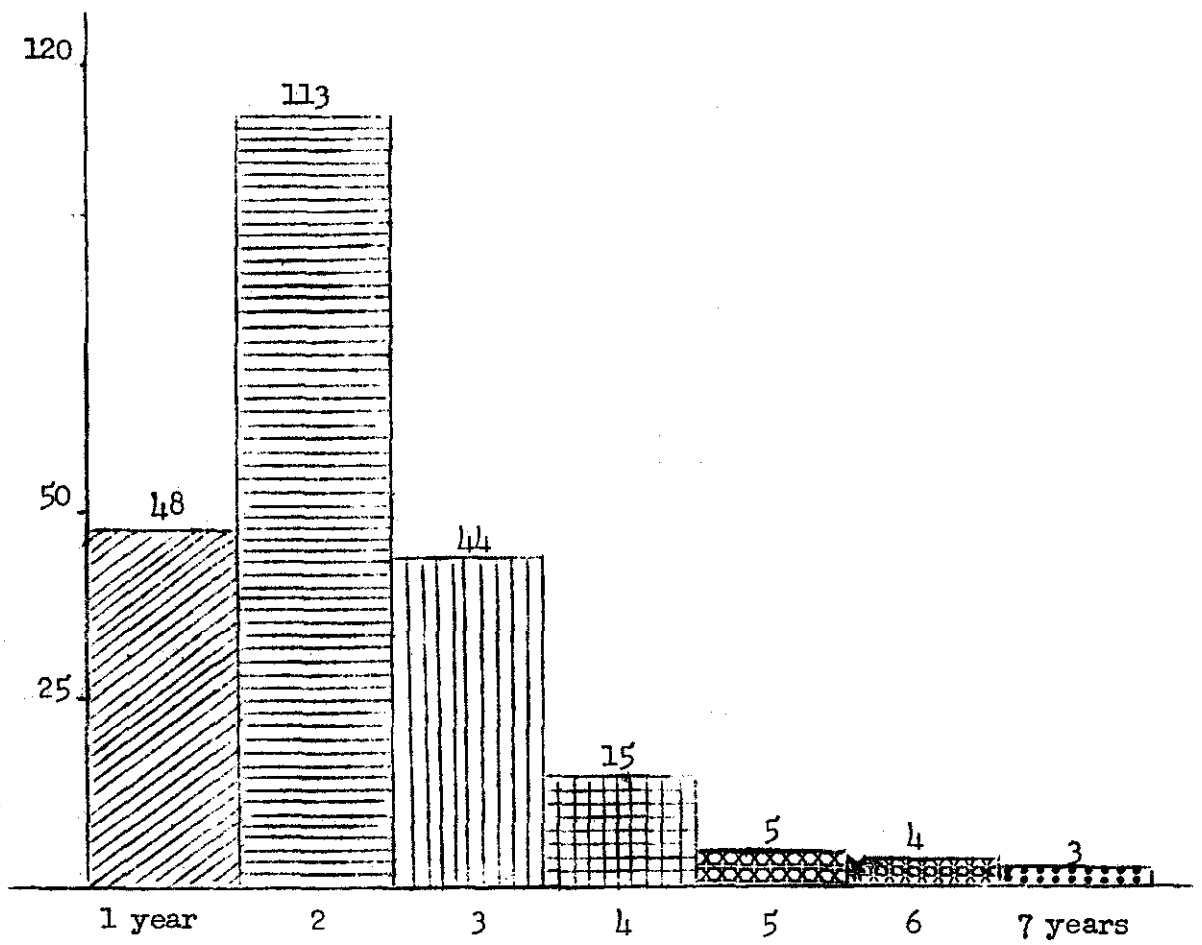
AGE DISTRIBUTION OF A.A.P.

1 - 24 months



AGE DISTRIBUTION OF A.A.P.

1 - 7 years



SOCIAL ENVIRONMENT

The children admitted to hospital belong to modest or economically poor families. However, we have heard of cases which occurred in children whose parents were well-to-do people (business, liberal professions, etc.)

CLINICAL FORMS

Out of the 232 cases, we noted:

150 cases of isolated attacks affecting one particular limb

58 cases of paraplegia

10 cases of dorsal and abdominal muscle attacks

8 cases of quadriplegia

4 cases of bulbar attacks

2 cases of facial attacks

Out of the 232 cases, four deaths were recorded: they consisted of bulbar forms.

BACTERIOLOGICAL EXAMINATION

For lack of investigation facilities no virus research was carried out.

ANTIBODY RESEARCH AND DOSAGE

This type of examination is not yet in use in Tunis. It was carried out in the Pasteur Institute of Paris in ten cases where no definite diagnosis had been made.

In eight cases the antibodies neutralized type I. This may be an indication that the 1960 epidemic was probably due to poliomyelitis virus type I.

PROPHYLAXIS OF POLIOMYELITIS IN TUNISIA

Although poliomyelitis is a compulsory notifiable disease, there still are several cases of poliomyelitis which escape the control of the Services concerned. The number of cases reported to the Public Health Department are definitely lower than those recorded in hospitals and clinics.

As far as the city of Tunis is concerned, when a case of poliomyelitis is reported to the Municipality, the premises are disinfected.

Furthermore, drinking water is subjected to daily control and the degree of water pollution in swimming-pools is investigated.

In the other towns no disinfection measures are undertaken.

VACCINATION

Up till now, vaccination is carried out on an individual basis or among very restricted communities.

The vaccine used for this purpose is the inactivated vaccine prepared by the Institut Pasteur of Paris.

Vaccination is carried out at an age which varies from six months to fifteen years. It is administered in three injections at one-month intervals.

The number of vaccinated children may be estimated at 4 000.

These are children mostly belonging to reasonably well-to-do families, as the vaccine is still expensive (approximately two dinars a box of three phials).

RECOMMENDATIONS

The problem of poliomyelitis in this country is an acute one. It is to be faced without delay, as the recent poliomyelitis epidemics resulted in a great number of motor infirmities which raise problems of:

- 1 - rehabilitation
- 2 - social integration

For the future, the problem is to prevent other epidemics which cannot be checked unless an extensive vaccination covering the whole receptive population is carried out.

Provision should, therefore, be made for:

- 1 - a vaccination programme
- 2 - a rehabilitation programme
- 3 - a social integration programme

VACCINATION PROGRAMME

Vaccination age: In our field of work, the only way to have an idea of the receptive population, is to take into account the age of children affected by the disease. All of them were under seven years of age.

It would be desirable to undertake a biological survey aiming at research on the antibodies neutralizing the different types of viruses.

This survey would have a twofold value:

1. It would permit the identification of the type of virus which prevailed during the recent epidemic.
2. It would help to provide accurate data on the receptive population as a whole.

In any case we consider - and this is a matter of opinion - that in vaccinating the child population of under ten years, maximum protection could be afforded.

WHAT VACCINE COULD BE USED ?

Inactivated vaccine or live vaccine ?

If an effective and rapidly carried out vaccination is to take place in Tunisia, a vaccine likely to be administered in a single dose should be used for the following reasons:

1. Whilst children living in large population centres may be gathered and regularly followed up in Maternal and Child Health units, children in rural and widely scattered localities escape any kind of control.
2. Even in MCW centres, experience has proved that a regular administration of the vaccine is not always possible, either because the parents do not keep to the fixed time or because an intercurrent disease interrupts the vaccination course.
3. A mass poliomyelitis vaccination cannot be effective unless it covers the receptive population within a very short period.

The best solution would be to make available an inactivated vaccine, a single dose of which would give results similar to those obtained with several doses.

Should this form of vaccine not be available, it seems that a first mass vaccination should be carried out, using the live trivalent vaccine administered in a single dose.

With this mass vaccination and in continuation of it, newborns should be given either the trivalent vaccine, if they cannot be regularly followed up, or a vaccination given according to the usual process: attenuated virus type I, then II and III, then I, III and IV.

In what season of the year should the mass vaccination be undertaken ?

Obviously the period to be selected for this purpose should be one with the least risk of interference with other viruses and particularly with enteroviruses.

During six months of the year (May/October) and practically in the whole Tunisian territory, infants commonly show acute or subacute digestive disturbances.

It is sometimes possible to detect, through copro-culture, the intestinal germ responsible for these forms of gastro-enteritis, but in most instances the aetiology remains undetermined; therefore, within the frame of cryptogenic diarrhoeas, some are probably due to enterovirus. Thus, children and, more particularly, infants should not be vaccinated during the summer season which, in Tunisia, lasts about six months.

The autumnal season is characterized by the nutritional effects of digestive disturbances which have become chronic. So it is that protein deficiencies are observed at all stages during the months of October, November and December.

It seems to us that if the vaccination is carried out during the winter season (January, February and March), the risk of interference with enteroviruses is reduced to a minimum.

Furthermore, it is during this period that the infant's body is the least debilitated by infectious or nutritional disease.

MOTOR REHABILITATION PROGRAMME

Rehabilitation is at present carried out by recently trained kinesi-therapists. They work in a small wing of the Charles Nicolle Hospital. In these premises they have neither balneotherapy nor appliances.

A rehabilitation centre is about to be completed.

This centre should be divided to accommodate mostly infants; in its equipment and staffing, due consideration should be given to the fact that 86% of the poliomyelitis cases consisted of children under three years.

The architecture and equipment of this centre are to be studied in detail with due consideration to local, medical and social factors.

CONCLUSION

Never did Tunisia experience such a severe poliomyelitis epidemic.

If the mortality rate is low - less than 2% in our statistics - the age of the patients and the importance of the sequelae require the following measures which should preferably be taken without delay:

- mass vaccination of the receptive population within a very short time
- rehabilitation adjusted to the clinical aspects of poliomyelitis in Tunisia
- planning of a programme for school admission of the motor disabled.