difference being the degree of severity—is put down as a subungual hyperkeratosis, a disturbance of the nail-bed (Swanker, 1948).

Various exciting causes have been blamed, from severe trauma—"Ostler's toes," or more chronic injury due to too short shoes—to peripheral neuritis, syphilis, tabes, leprosy, ichthyosis, hemiplegia, and heart disease with peripheral stasis. Even heredity has been blamed, especially in conjunction with dental deformities and hypertrichosis. In other cases no apparent cause except neglect, dirt, and senility has been found. The condition is rare before middle age.

When the condition is severe, treatment is mechanical removal of the deformed nails, though often they grow again in the same deformed manner, and the nail-bed may have to be excised. The provision of properly fitting shoes, cleanliness, and regular chiropody help to control the condition.

In the present case, the patient's age and his ankylosing spondylitis and osteoarthritis would account for the neglect, as he was unable to stoop sufficiently to attend to his toenails.

I have to thank Dr. T. H. Bates for permission to publish this case, Mr. Strother Stewart for his interest and surgical help, and the University of Durham for the photograph.

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Encephalitis in an Infant after Vaccination with 17 D Yellow Fever Virus

The first yellow fever vaccinations were done with the French neurotropic strain of the virus, produced by serial passage through the brains of mice. This vaccine produced a high proportion of severe reactions involving the central nervous system unless accompanied by adequate doses of immune serum.

The attenuated 17 D strain was then evolved by passing the virus through tissue cultures of chick embryo from which the nervous tissue had been removed. At first no encephalitic reactions were noticed with this vaccine, even during a large-scale trial carried out in Brazil in 1937. In July, 1941, therefore, it was most surprising to discover cases showing definite signs and symptoms of encephalitis in recently vaccinated persons in an area of Brazil (Fox *et al.*, 1942). These cases were all caused by a particular substrain of 17 D virus—E 718. An experimental vaccination survey was then carried out, using four other substrains, and three of these were found to cause encephalitic signs and symptoms—NY 310, E 750, and E 752, but not to such an extent as E 718. This showed that 17 D substrains could undergo alterations in pathogenicity during passage in embryo tissue cultures away from the parent strain, and suggested that strict limitation of serial passage might lessen the risk of such alterations.

In 1941 the manufacture of 17 D virus was standardized and the "seed-lot" system adopted. This means that the serial passage of substrains is strictly limited, and the secondary seed virus used in the preparation of the vaccine must have passed the "monkey safety test," and thus be free from any increase in viscerotropism or neurotropism. Since the adoption of the seed-lot system in 1942 only five other cases have been reported following vaccination with 17 D virus. Thus, according to Stuart (1954), five cases of meningo-encephalitis have occurred among 1,800 infants less than 1 year old at the Pasteur Institute during 1952–3. All five patients recovered completely. In this connexion it is noteworthy that among 40,000 adults similarly immunized during the same period no case of encephalitis occurred.

The following case occurred recently, and would appear to be the first to follow 17 D vaccination in England.

CASE REPORT

The patient, a baby girl aged 5 weeks, was admitted with convulsions. She had had a yellow fever vaccination 13 days prior to admission. Four days before admission she refused her feeds and whimpered when her back was touched. Two days before admission—that is 11 days after vaccination—twitching started on the right side of the body with eye-rolling. These convulsive seizures occurred at 5 to 10-minute intervals and there was difficulty in waking the baby for her feeds. There was no local reaction at any time. The convulsions became more severe and frequent until admission.

Physical examination showed a well-nourished baby with a temperature of 101.8° F. (38.8° C.). Fits were observed at 10-minute intervals, mainly involving the right side of the body and face. There were some generalized convulsions involving the arms and legs. The anterior fontanelle was tense, but the pupils were equal and reacted to light and there was no papilloedema or paralysis.

Investigations.—The haemoglobin was 96%, the white blood cells numbered 31,000 (polymorphs 59%, lymphocytes 29%). Cold agglutinins showed a titre of 1 in 9. The C.S.F. was clear and colourless and not under pressure; the protein was 90 mg. per 100 ml., with increase in globulin; sugar, 60 mg. per 100 ml.; chlorides, 690 mg. per 100 ml.; cells, 117 (polymorphs 40%, lymphocytes 60%); no acid-fast bacilli were found and there was no growth on culture.

The first day after admission the temperature was still 100–101° F. (37.8–38.3° C.), and the convulsions persisted despite intramuscular sodium amylobarbitone and paraldehyde. All feeds were vomited. Sulphadimidine, 0.25 mg. four-hourly, and penicillin, 20,000 units intramuscularly six-hourly, were started. On the second day the temperature had dropped to 99° F. (37.2° C.), and the convulsions were controlled except when the baby was moved. The fontanelle was bulging and some neck rigidity was present but no papilloedema. A repeated C.S.F. examination showed a similar picture and again no growth on culture. 5,000 units of penicillin and 0.25 mg. of streptomycin were given intrathecally. Later in the day there was sudden collapse and cyanosis probably due to inhalation of vomit. The baby's condition was quickly improved by oxygen and postural drainage. Streptomycin, 0.25 mg. daily intramuscularly, was begun. X-ray examination showed an opacity in the left upper lobe. On the third day the temperature was normal, slight twitching occurred only when the baby was disturbed, and the feeds were taken without vomiting. After 10 days the temperature was normal, the chest clear, and only occasional athetoid movements were noted; treatment was stopped. She was discharged after 20 days in hospital apparently quite normal. At a follow-up a month later she was gaining weight and her mother had not noticed any return of symptoms.

COMMENT

A case of meningo-encephalitis following vaccination with 17 D virus in a baby of 5 weeks has been described. Complete recovery occurred. The vaccine used was derived from vaccine lots sent from the Yellow Fever Laboratory of the Rockefeller Foundation to the Wellcome Institute in 1946. There would appear to be two possible explanations of the occurrence of this case: either increased neurotropic affinity of the virus in spite of limited serial passage, or a hypersensitivity to such prophylaxis in small infants which is not found in adults.

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