

16565

Isolation of Poliomyelitis Virus from Human Stools During the Incubation Period.*

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Since 1945, there have been 3 reports of the isolation of poliomyelitis virus from human stools collected during the incubation period. Pearson and Rendtorff¹ recorded the isolation of poliomyelitis virus from the stool of a child taken 11 days before the onset of an "abortive" case of the disease; Brown, Francis, and Pearson² from the stool of a boy taken 12 days before the onset of symptoms and 19 days before the onset of paralysis, and Gear and Mundel³ from the stool of a boy 12 days before onset of signs and paralysis.

Melnick⁴ has isolated virus from the stools of monkeys and chimpanzees several days prior to the onset of clinical signs and symptoms following subcutaneous and intracutaneous inoculation of these animals with poliomyelitis virus.

Poliomyelitis virus has been isolated by us from the stools of 3 more children, taken before the onset of the first signs and symptoms. Poliomyelitis in each of these children was what we believe to be the usual form of the disease, *i. e.*, without stiff neck, stiff back, or paralysis.⁵

In 1946, an outbreak of poliomyelitis occurred in a nursery school for children of

preschool age in Chicago. Among 29 children in the school, one case of paralytic and 2 cases of meningitic poliomyelitis occurred. Following the appearance of the paralytic case, one of us (A.E.C.) began close and careful observations on the rest of the children in the school. Daily clinical observations, including temperature determinations, were made on all of the children in the school and, whenever possible, specimens were collected for virus study. Nineteen of the remaining 26 children developed symptoms of poliomyelitis,⁵ but without paralysis, stiff neck or stiff back, and virus was isolated from the stools of 16 of these children collected at the onset of the first symptoms (fever, headache, drowsiness, myalgia, vomiting or constipation).

Stools collected prior to the appearance of symptoms in 4 of the 16 children with virus in their stools at the onset of symptoms, were available for testing.

Specimens were prepared for testing, and 2 monkeys were inoculated by the method previously described.⁶

The inoculated monkeys were considered to have been infected with poliomyelitis virus if, following inoculation, they developed fever, progressive paralysis, and microscopic lesions typical of poliomyelitis in the C.N.S. In one monkey no frank paralysis was observed, but it developed marked tremors of extremities and neck following high fever, and typical C.N.S. lesions were present. It was considered that this animal had been infected with poliomyelitis virus.

Table I shows the results of the stool tests described.

Poliomyelitis virus was isolated from the

* Aided by grants from the National Foundation for Infantile Paralysis, Inc., and its Cook County Chapter.

¹ Pearson, H. E., and Rendtorff, R. C., *Am. J. Hyg.*, 1945, **41**, 179.

² Brown, G. C., Francis, T., Jr., and Pearson, H. E., *J. A. M. A.*, 1945, **129**, 121.

³ Gear, J. H. S., and Mundel, B., *South Af. Med. J.*, 1946, **20**, 106.

⁴ Melnick, J. L., *J. Immunol.*, 1946, **53**, 277.

⁵ Casey, A. E., Fishbein, W. I., Gordon, F. B., Schabel, F. M., and Bundesen, H. N., *Transactions, Section on Pediatrics, American Medical Association, Chicago, June 23, 1948.*

⁶ Gordon, F. B., Schabel, F. M., Casey, A. E., and Fishbein, W. I., *J. Infect. Dis.*, 1948, **82**, 294.

TABLE I.
Poliomyelitis Virus in Stools Before Onset of Symptoms.

Name	CSA*	Date of onset and symptoms at onset	Dates of collection of stools tested	Virus isolations
El Bal	WF2½	8/5/46 Fever of 99.6° Axillary 1 day only	8/4/46 and 8/5/46 7/30/46 and 7/31/46 7/27/46	Virus isolated Virus not isolated Virus isolated 9 days before onset
Jo Jac	WF3	8/15/46 Fever 99.6° Axillary 1 day only	8/14/46 and 8/21/46 8/8/46 7/27/46	Virus isolated Virus isolated 7 days before onset Virus isolated 19 days before onset
Ri Sic	WM3½	8/7/46† Drowsiness and constipation	8/1/46, 8/5/46, and 8/8/46 7/26/46	Virus isolated 12 days before onset
Pa Woz	WF4	7/29/46 Fever	7/29/46 and 8/1/46 7/27/46	Virus isolated Virus not isolated

* Color, Sex, Age.

† This child had no stool on 7/27/46. Previous analysis of symptoms has indicated that constipation in contacts is of significance only if it occurs on successive days or, if on one day only, in conjunction with some other symptom typical of poliomyelitis (*i.e.*, fever, headache, myalgia, vomiting, or drowsiness).

stool of one child 19 days and 7 days before the onset of the clinical disease; from the stool of a second child 9 days before onset of the clinical disease, and from the stool of a third child 12 days before the onset of the clinical disease.

The onset dates (8/5, 8/7, and 8/15) in the 3 children with virus in stool prior to appearance of symptoms were the latest recorded among the 22 children in the nursery school who had the clinical disease. This probably indicates prolonged incubation

periods in these 3 children, since no symptoms or temperature rises were detected by earlier daily observations in the school beginning on July 25. The other children, including the one paralytic and the 2 meningitic cases, had onsets between July 14 and August 5.

These observations confirm those reported by other workers, namely, that the virus of poliomyelitis may be present in the stools of man for a considerable period of time prior to the onset of symptoms of the disease.

16566

Nature of the Refractory State Following Sublethal Dose of Human Placental Thromboplastin.*

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The toxicity of placental extracts upon intravenous injection into experimental animals has been studied repeatedly in the past half

century by investigators interested in the toxemias of late pregnancy. Schneider,¹ however, was the first to report on the refractory state in mice following sublethal injections of "placental toxin." This desensitization was temporary and lasted for ap-

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¹ Schneider, C., *Am. J. Physiol.*, 1946, **147**, 250.