Conclusion. In view of the negative results herein reported it would seem that a larger series of tumors with more detailed and more enlarged photographs of the induced tumors should be available before the principle of transference from mother to embryo of a cancer-producing agent can be considered as established.

7891 C

Effect of Poliomyelitis Virus in Baby Monkeys Previously Given Paratyphoid Colon Filtrate and Vaccine.*

JOHN A. TOOMEY.

From the Department of Pediatrics, Western Reserve University, and the Division of Contagious Diseases, City Hospital, Cleveland, Ohio.

The addition of paratyphoid colon bacillus filtrate (previously termed enteric toxin) to poliomyelitis virus accelerated the production of the disease.[1] What would happen if monkeys *(Macacus rhesus)* were injected with this filtrate as well as with a vaccine made from the organisms that produced it? Adult monkeys have shown some agglutinins for the typho-paratypho-colon group, therefore, young monkeys were chosen for this experiment, since their blood serums contained little or no agglutinins for this group of organisms.[2]

Paratyphoid and colon bacilli were grown in 0.5% glucose broth and after 10 days the media were centrifuged, the organisms combined, autoclaved, and were called the vaccine; the supernatant fluid was passed through a mandler N and W filter and called the P.C.B. filtrate (enteric toxin). Massive doses of the filtrate and vaccine were injected subcutaneously into 3 of 6 baby monkeys within from 2 to 3 months after they had been weaned. The animals, weighing from 890 to 1104 gm., were obtained in September of 1933 and were injected as follows: 10-6-33, 0.25 cc. vaccine; 10-10-33, 0.5 cc. vaccine; 10-17-33, 1.0 cc. vaccine; 10-20-33, 1.0 cc. vaccine; 10-24-33, 1.5 cc. vaccine; 10-30-33, 1.75 cc. vaccine; 11-3-33, 2.0 cc. vaccine; 11-11-33, 2.0 cc. vaccine; 11-20-33, 2.0 cc. filtrate; 11-28-33, 2.0 cc. filtrate; 12-6-33, 3.0 cc. filtrate; 12-13-33, 2 cc. vaccine;

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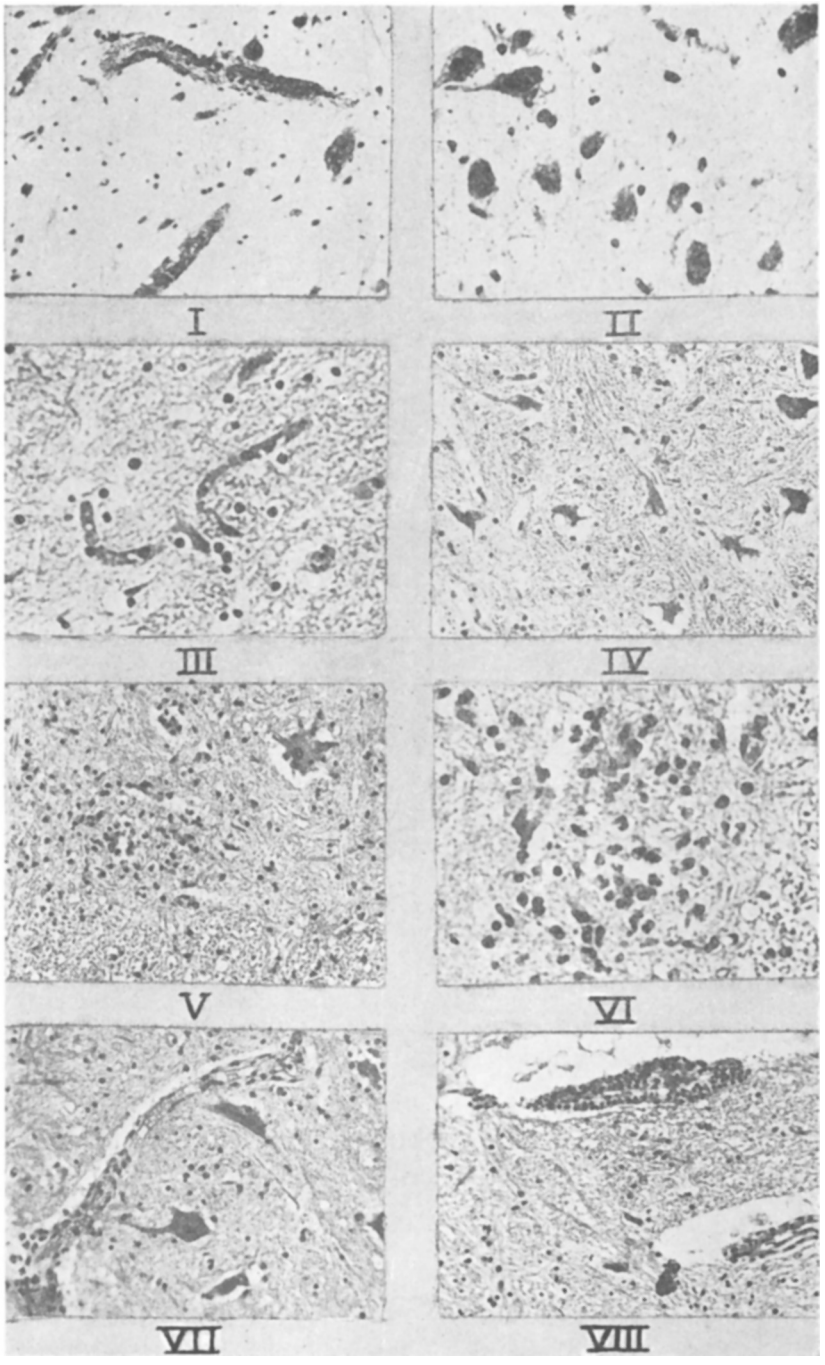
1 Toomey, John A., PROC. SOC. EXP. BIOL. AND MED., 1934, **31**, 1015.

2 Toomey, John A., *J. Inf. Dis.*, 1934, **54**, 74.


I
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III
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VIII

12-20-33, 3 cc. filtrate; 12-29-33, 2 cc. vaccine; 1-8-34, 2 cc. filtrate; 1-15-34, 2 cc. vaccine; 1-22-34, 3 cc. filtrate; 2-13-34, 2 cc. vaccine. Only a short rest of 2 weeks was allowed before the experiment was started.

Set I. Monkey A, injected as noted above, weighing 1360 gm., and monkey B, control, weighing 1177 gm., were each injected subserosally at multiple points with 25 cc. of a 1% suspension of poliomyelitis virus. Monkey A became very sick immediately after the operation, was slightly better the next day, but began to have spasms of the left side on the 4th day and died on the 5th day. Monkey B, the control, withstood the operation very well, did not show any symptoms and remained active until the 10th day when it developed some weakness of the right leg which became obviously atrophied by the 20th day.

Set II. Monkey C, injected as noted, weighing 1654 gm., and monkey D, control, weighing 1688 gm., were injected in the same manner as those animals of set I. Monkey C became very sick immediately following the operation, was better on the 3rd day, but had a relapse on the 5th day with tremor and weakness of the flexors of the right foot and left hand. This weakness gradually progressed to quadriplegia and death on the 12th day. Monkey D, control, became very ill on the 3rd day following the injection. There was furring and a tremor on the 4th day and weakness of the quadriceps of the right thigh and left foot on the 5th day. It made a complete recovery, save for some atrophy of the left foot, leg and thigh.

Set III. Monkey E, injected as noted, weighing 1452 gm., and monkey F, control, weighing 1422 gm., were each given 80 cc. of a 1% suspension of poliomyelitis virus into a section of the small intestine that had been clamped off. Monkey E died the day following the injection. Monkey F, control, was lively and active until the 9th day when it developed some weakness of the right foot and leg and left hand. On the 20th day, it had an obvious paresis and atrophy of the muscles of the right leg.

A control animal, weighing 1620 gm., was later injected with the

FIG. I. Monkey A-H and E-133 X. Showing capillary increase.
FIG. II. Monkey A-H and E-266 X. Showing ganglion cell damage.
FIG. III. Monkey E-H and E-133 X. Showing capillary increase.
FIG. IV. Monkey E-H and E-133 X. Showing ganglion cell damage.
FIGS. V and VI. Monkey E-H and E-133 X and 266 X. Showing localized area of inflammation.
FIG. VII. Monkey C-H and E-266 X. Showing dilated vessels and damaged ganglion cells.
FIG. VIII. Monkey C-H and E-133 X. Showing typical perivascular infiltration of round cells.

same dosage of filtrate and vaccine and was sacrificed. Histological sections of the central nervous system showed no positive findings.

All 3 of the animals previously injected with the vaccine and filtrate died. All 3 controls developed localized paresis or paralysis, but none died.

Histopathological examination of the cord of animal A which died on the 5th day after the injection of the virus showed degeneration of the anterior horn cells and only a slight inflammatory reaction. There was definite dilatation of the capillaries, but no distinct cuffing. The cord of animal E which died the day after the operation and injection, had massive degeneration of the anterior horn cells with some autolysis, hardly a ganglion cell in the lumbar area escaping some damage. An occasional polymorphonuclear cell and a few glial cells were also found. There was a dilatation of the capillaries, but no distinct cuffing. The sections made from the cord obtained from animal C which died on the 12th day post-injection, were decidedly typical, since examination showed neuronophagia, tremendous glial reactions, an increase in cuffed capillaries, round cells throughout the field together with an occasional leucocyte, and, in certain sections, practically a total destruction of the anterior horn cells.

The production of massive abscesses after subcutaneous injections of staphylococcus, our laboratory culture No. 35, (1 animal with control), 2 successive subcutaneous injections given 2 days apart of the 5th immunizing dose of scarlet fever streptococcus toxin (Dick) (1 animal with control), the presence of massive pulmonary tuberculosis in 11 of the monkeys used during the past 3 or 4 years, and the injection of vaccinia virus intradermally (1 animal with control) did not accelerate the production of poliomyelitis in these animals when they were later given the disease experimentally.

Injections of massive doses of P.C.B. filtrate and vaccine subcutaneously rendered the monkey less immune so that when poliomyelitis virus was later introduced by way of the gastrointestinal tract, the production of the disease was accelerated.