Conclusions: 1. The bowel wall in simple intestinal obstruction cannot withstand marked increase of intra enteric pressure as well as the normal bowel wall. 2. This is especially true of that portion of the bowel just above the site of obstruction. 3. The most frequent site of tearing of the serosa and rupture is the antimesenteric border of the bowel.

8022 C

Experiments with Poliomyelitis Virus.*

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In my series of experiments on poliomyelitis the average length of time elapsing between the intracerebral injection of the virus in the *M. rhesus* monkey and the onset of paralysis was from 5 to 10 days. The clinical effects of motor cell destruction were not noticed for some time, irrespective of the quantity (from 0.25 cc. to 2.0 cc.) and the concentration (from 1% to 10%) of the virus administered. When the motor areas of 2 monkeys were exposed at operation and from 0.25 cc. to 0.5 cc. of a 2% suspension of virus injected directly into their centers no paralysis developed immediately. When larger amounts (from 2.0 cc. to 2.5 cc. of a 2% suspension) were injected in 2 monkeys in the same area, some partial hemiparesis occurred following the recovery of the animals from the anesthetic. The hemiparesis that occurred was fleeting since the animals recovered within 24 hours. It was not due to the virus, but probably to local mechanical effects, since the same amount of homologous blood serum injected in the exact cortical motor area produced a similar slight immediate hemiparesis from which 2 monkeys recovered just as quickly. The quadriplegia which develops after the injection of the virus occurred only after the usual lag interval, *i. e.*, days after the injection.

The cortical areas are very resistant or perhaps less susceptible than other areas of the central nervous system to the virus. The virus is considered to have a predilection for the motor cells of the lumbar enlargement.

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What would follow the injection of the virus into the center of those very cells of the lumbar enlargement that are supposedly highly susceptible or least resistant to the virus? When the cord was exposed at operation and 0.1 cc. of a 1% or 10% suspension of virus injected on one side of the cord in 5 animals, there was no clinical evidence of immediate paresis or paralysis; from 3 to 4 days elapsed before poliomyelitis appeared. However, when the same amount (0.1 cc.) of a chemical that actually destroys cells, such as a solution of acetic acid diluted to pH 6, was injected in the same place, a paralysis, which did not spread, developed in the homolateral leg immediately after (2 monkeys). When doses as large as 0.3 cc. of a 1% suspension of virus were injected in that small area of the cord in one animal and 0.5 cc. of a 10% suspension into another, there was immediate paresis or paralysis following the recovery of the animals from the anesthetic. This paralytic effect must have been caused by other than specific factors since the animals thus injected developed poliomyelitis 2 and 5 days after the injection, respectively. It probably was the result of pressure since the injection of the same dose of homologous serum (0.3 cc. or 0.5 cc.) in the same area in 2 monkeys also caused the same type of immediate paralysis, although there was no later extension of the paralysis in the latter animals.

When the vagus nerve was injected with from 0.2 to 0.3 cc. of a 1% suspension of virus and when paralysis followed, which it did not always do, 3 to 18 days elapsed before its occurrence. When the median nerve of the arm was injected with from 0.3 cc. to 0.5 cc. of a 1% suspension of virus, 2 out of 5 animals injected became paralyzed; one the 5th and the other the 6th day following the injection. The other 3 did not develop paralysis. When the virus was injected between clamps or subserosally into the small intestine from 2 to 14 days elapsed before monoplegia or partial paraplegia developed, the usual onset of paralysis coming on within from 2 to 3 days (31 animals).

P. C. B. filtrate (described previously,[1]) when combined with the virus of poliomyelitis and injected into the motor cell area of the cortex in amounts so small that no effect should have been produced, nevertheless, produced paresis almost immediately. The P. C. B. filtrate, like the virus, was in itself innocuous to the monkey, but when the 2 were combined and injected, paralysis resulted. One tenth of a cc. of a 50% dilution of P. C. B. filtrate injected directly into the lumbar enlargements of 3 monkeys produced neither an

[1] Toomey, John A., PROC. SOC. EXP. BIOL. AND MED., 1934, **32**, 423.

immediate nor a late paralytic effect. When, however, 0.1 cc. of a combination made up of equal parts of a 2% suspension of virus and P. C. B. filtrate was introduced into the same area in 3 other animals, an immediate paresis or paralysis occurred in the leg of the homolateral side. There was no quiet period during the interval between the injection of the virus and the production of paralysis. The paralysis of the homolateral leg spread gradually and without a lag to the opposite leg, until it finally involved all the muscles usually affected in quadriplegia.

8023 P

Vitamin B_1 and B_2 Content of Human Urine.

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With the hope of throwing some light on the fate of vitamins B_1 and B_2 in the body, preliminary experiments have been made to determine whether human urine contains demonstrable amounts of vitamins B_1 and B_2. As yet there are no satisfactory chemical methods available for these vitamins such as are now in use for determining vitamin C. Therefore biological assays for the vitamin B_1 and B_2 content of the urine were made by the rat feeding technique.

Since it was impossible to fractionate the urine in any way without loss of vitamin, the 24 hour urine samples were concentrated by vacuum distillation and dried *in vacuo* over sulphuric acid. The dried and powdered urine was thoroughly mixed with one part by weight of sucrose and one-half part by weight of Crisco, and fed to rats on a basal diet in quantities equivalent to 1/25 of the daily 24 hour urine output. In the test for vitamin B_1 the basal diet was supplemented with 500 mg. of autoclaved yeast. For the vitamin B_2 experiments the source of the vitamin B_1 was an extract of rice polishings made according to Rosedale.[1] The rats were fed the urine preparations after a depletion period in which the weight had become stationary for 3 weighing periods of 2 days each.

[1] Rosedale, J. L., *Biochem. J.*, 1927, **21**, 1266.