

7208 P

Experimental Peritonitis Produced by Injection of Bacteria.

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Studies of experimental peritonitis have been almost insuperably handicapped by the fact that the injection of bacteria alone has failed to reproduce the disease. This was noted by Wegner.¹ Confirmation by many others has occurred (Pawlowsky,² Steinberg,³ David.⁴) It is a commonplace today that injection of even overwhelming amounts of bacteria fails to produce a peritonitis. Although the animal may be killed by the overwhelming sepsis, the peritoneum does not exhibit any of the usual signs of peritonitis and may even be sterile by the time the animal has succumbed from the absorption of the organism. Rewbridge⁵ found that the lethal dose of Welch bacilli injected into the peritoneal cavity was 18 cc. of 24-hour broth culture, but that bacteria in smaller numbers than this had no effect whatsoever.

The standard methods of production of experimental peritonitis are (1) The injection of bacteria plus some foreign body, as agar culture media, feces, etc. (2) Production of internal fistulas such as opening the gastrointestinal tract. (3) Leaving large amounts of necrotic tissue in an infected abdomen such as is produced by the ligation and subsequent gangrene of an appendix. All of these conditions do not as a general principle exactly reproduce the onset of peritonitis in the human clinically.

The experiments tabulated in Table I are important because they demonstrate the fact that it is possible to produce a peritonitis by bacteria alone. Only small amounts of bacteria were used in most cases and the development of a typical peritonitis occurred in about half the cases.

The only difference between these and previous unsuccessful attempts appeared to be that the dogs used were in very poor condition. They were those half-starved animals which arrive in every experimental laboratory and are usually cared for and properly nourished

¹ Wegner, G., *Arch. klin. Chir.*, 1876, **20**, 51.

² Pawlowsky, A. D., *Centr. Chir.*, 1887, **14**, 881.

³ Steinberg, G., and Ecker, E. E., *J. Exp. Med.*, 1926, **43**, 443.

⁴ David, V. C., *Tr. Am. S. A.*, 1928, **46**, 362.

⁵ Rewbridge, A. G., and Hrdina, L. S., *Proc. Soc. Exp. Biol. and Med.*, 1930, **27**, 528.

TABLE I.

Material injected	Amount cc.	Death due primarily to generalized peritonitis	Death from other causes	Survival
24 hr. brain culture of <i>B. welchii</i>				
Subperitoneally	1	0	0	1
Same	2	1	1	1
Same	5	0	1	2
Same	4	3	2	2
24 hr. broth culture of <i>B. coli</i>				
Subperitoneally	4	6	3	6
18 hr. broth culture of <i>B. coli</i> and <i>S. hemolyticus</i>				
Subperitoneally	5	3	2	1
18 hr. broth culture of <i>S. hemolyticus</i>				
Subperitoneally	5	0	1	4
18 hr. broth culture of <i>B. coli</i>				
Intraperitoneally	5	3	1	0
24 hr. broth culture of <i>B. coli</i>				
Intraperitoneally	4	4	0	14
Same	5	3	1	2
24 hr. broth culture of <i>S. hemolyticus</i>				
Intraperitoneally	5	0	1	2
Same	4	0	0	1
24 hr. broth culture <i>B. coli</i> and <i>S. hemolyticus</i>				
Intraperitoneally	5	1	0	3
Totals	—	24	13	39

for a few days before being used. One may draw the conclusion from these experiments that bacteria alone will cause peritonitis in a high percentage of cases providing that the animal's resistance is lowered by suitable means.

7209 P

Studies on Acholic Cachexia. I.* Use of the Dragstedt Cannula in Biliary Studies.

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Collection of bile from experimental animals has always presented almost insuperable difficulties. Simple intubation of the ducts or the gall bladder has resulted in ascending infection, which has seriously interfered with the results obtained, as the bile then originated in livers more or less damaged by hepatitis. In such preparations leak-

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