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Influence of Splenectomy on Susceptibility of Mice to Infection with *Taenia taeniaeformis* Eggs.

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The following experiment was carried out to determine if splenectomy would make mice more susceptible to infection with eggs of *Taenia taeniaeformis*, as it is well known that the removal of the spleen does lower the resistance of mice against various pathogenic organisms. Inbred mice* were used of the same comparatively resistant strain PCDM which had served in previous series of experiments, Feng and Hoeppli,¹ Fortuyn and Feng.² By the earlier experiments, it had been found that mice of the PCDM strain, compared with mice of the other inbred strains, had on the average a smaller number of cysts in the liver when fed with an equal number of eggs. There were, however, also in the PCDM strain always a few mice which became heavily infected whereas a few others remained completely negative, indicating that apart from a comparatively high resistance in the great majority of the PCDM animals there were a few individuals with either a complete or a very low resistance. Notwithstanding these few exceptions, the PCDM strain appeared on account of its comparatively higher resistance particularly suitable for the present experiment.

Material and Method. Altogether 56 PCDM mice of about the same age (3-4 months) were used. They were divided into 2 groups of 28 each and the mice of one group had their spleens removed under ether anaesthesia. Both groups were kept for observation for one month after the splenectomy had been performed. The blood of the 28 operated mice was examined at intervals but no organisms such as *Bartonella* or similar forms were found and the mice appeared not to suffer in consequence of the operation. As additional control of the viability of the *Taenia* eggs, one normal white laboratory bred rat about 3 months old was used. *Taenia* eggs were obtained from gravid segments of *T. taeniaeformis* from a freshly killed experimentally infected cat. As in the previous experiments, the eggs were administered by holding the experimental animal ab-

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¹ Feng, L. C., and Hoeppli, R., *Chinese Med. J.*, 1939, **55**, 45.

² Fortuyn, A. B. D., and Feng, L. C., *Peking Nat. Hist. Bull.*, 1940, **15**, in press.

domen upward with its mouth forced open and by dropping the eggs suspended in normal saline from a glass dropper into the depth of the mouth cavity. The animal, as a rule, swallowed the fluid without objection.

Experiment. On July 10, 1940, the control rat, the 28 normal mice and the 28 splenectomized mice were infected each with 350-400 eggs. About 3 months later, on October 7th, all the animals were killed and the cysts in each liver examined and counted. The control rat was found to harbor 120 well developed cysts with living larvae. In both sets of mice, it was observed that only a comparatively small number of cysts corresponded in size to a normal 2-month-old cyst in mice and contained living larvae. The great majority consisted of either very small cysts or of merely small white spots which were solid and evidently represented the place where larvae had developed for a brief period. In Table I, the combined number of cysts and white spots is given for each mouse.

Result. In order to analyze the figures of the table, the following

TABLE I.
Combined Number of Cysts and White Spots for Each Mouse. In Parentheses the Number of White Spots Alone.

Splenectomized mice			Normal mice		
No.			No.		
6	(4)	F	5	(5)	M
7	(3)	F	5	(1)	F
7	(7)	M	14	(13)	F
10	(10)	F	4	(4)	F
9	(7)	F	1	(1)	M
3	(3)	M	4	(4)	M
5	(5)	F	2	(1)	M
5	(5)	F	4	(4)	F
4	(4)	F	7	(7)	F
4	(4)	F	3	(3)	F
3	(3)	F	0	(0)	M
5	(5)	F	2	(2)	F
7	(7)	F	0	(0)	F
0	(0)	M	2	(2)	F
1	(1)	M	3	(3)	M
7	(5)	F	1	(1)	M
7	(7)	M	3	(3)	F
6	(6)	F	2	(2)	F
13	(13)	M	4	(4)	M
9	(7)	F	3	(3)	M
0	(0)	F	4	(4)	F
0	(0)	M	1	(1)	F
0	(0)	M	3	(3)	F
4	(4)	F	0	(0)	M
0	(0)	F	8	(8)	M
3	(3)	M	10	(10)	M
9	(5)	F	18	(18)	M
14	(13)	M	3	(3)	M
148	(131)		116	(110)	

were considered: The total of cysts plus spots in each group; the total of cysts alone and of spots alone in each group; the average of cysts plus spots in each group. In addition, the method of pairing and the t-test was applied and also the z-test to determine the importance of sex.

Results. The total number of cysts plus spots is higher in splenectomized mice (148) than in normal ones (116). In splenectomized mice, 17 cysts developed to proper size (131 spots), as compared with only 6 cysts in the non-operated mice (110 spots). The average number of cysts plus spots in splenectomized mice is 5.28 ± 0.70 , in normal mice 4.14 ± 0.76 . This average number of cysts plus spots in the 2 groups does not differ significantly because the error attached to it is too great. When the t-test is applied, however, it becomes evident that the number of cysts found in splenectomized mice differs significantly from the number found in the normal group. This is especially true for individuals with medium resistance. When either no cysts plus spots or a large number are found, the difference between the 2 groups is not obvious. The z-test showed that sex differences are insignificant. It is evident that besides splenectomy, there are other unknown factors contributing to the variability of the number of cysts which are of equal or greater importance.

Conclusion. In inbred mice of a strain which is somewhat resistant to infection with eggs of *Taenia taeniaeformis*, splenectomy increases the susceptibility to infection except in those comparatively few mice with an individual resistance that is either abnormally high or abnormally low.

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Distribution of Sulfanilamide in the Ocular Fluids and Tissues After Local Application.

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Marshall^{1, 2} first demonstrated that after oral administration,

¹ Marshall, E. K., Jr., Emerson, K., Jr., and Cutting, W. C., *J. A. M. A.*, 1937, **108**, 953.

² Marshall, E. K., Jr., Emerson, K., Jr., and Cutting, W. C., *J. Pharm. and Exp. Therap.*, 1937, **61**, 196.