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STUDIES ON THE IMMUNOLOGICAL FUNCTIONS OF SPLEEN  
— EFFECT OF SPLENECTOMY ON PHYSIOLOGICAL  
FUNCTIONS OF DOG —

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Hematological and blood chemical findings and non-specific immunological functions of peripheral blood lymphocytes (PBL) were analyzed for investigation of the immunological functions of spleen using splenectomized and non-splenectomized dogs before and until the 56th day after splenectomy.

The results were summarized as follows:

(1) The number of erythrocytes was gradually decreased and recovered on the 42nd day after splenectomy, but hematocrit value was maintained at a low level from the 42nd day. The numbers of leukocytes and differential leukocytes were temporarily elevated after operation in both splenectomized and non-splenectomized groups. After that, they did not change markedly. The number of platelets was increased significantly and the number of erythrocytes containing Heinz bodies was increased with considerable significance from the 42nd day after splenectomy. (2) Total protein value, A / G ratio and differential protein value were similarly changed after operation in both groups. IgM value had a tendency to decrease after splenectomy. Cortisol value had a tendency to increase gradually from the 28th day after splenectomy. On the other hand, indexes of the functions of liver and kidney showed no abnormality after splenectomy. (3) The proportion and the numbers of thymocyte antigen (Ta) and surface immunoglobulin positive lymphocytes in peripheral blood were not markedly changed after splenectomy. (4) The blastogenicities in PBL against three mitogens (PHA, ConA, PWM) were all decreased early after splenectomy and maintained at low levels until the 14th day in both groups. The blastogenicities were temporarily increased on the 28th day, but they were then maintained at low levels until the 56th day after splenectomy. (5) In antibody-producing cell responses of peripheral blood B lymphocytes to PWM, the numbers of cytoplasmic-immunoglobulin positive cells of IgM and IgG were slightly increased temporarily after the operation in both groups. But their numbers in the splenectomized group were decreased on the 56th day. (6) Suppressor activity of Ta-positive lymphocytes in peripheral blood was slightly increased on the 56th day in the splenectomized group.

The above results suggested that spleen may play an important role in cell-mediated immunity as well as humoral immunity.