

Haematological Observations in Splenectomized Theileria Carrier Sheep

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Removal of spleen, a major component of haemopoietic system results in lowered body resistance in addition to alterations in normal physiological functions. Splenectomy is being used to develop hidden infections and to identify the carrier conditions. Here, an attempt is made to study the effects of splenectomy on blood values, on the multiplication rate and the morphological characters of the parasites in theileria carrier sheep.

The observations were made on four Bandur sheep carrying *Theileria hirci*

infection, at weekly interval for five weeks before splenectomy and on every 4th day after splenectomy.

Before splenectomy all the four sheep had a very low parasitic count ranging from 0.39% to 0.59% and after splenectomy the parasitic count slowly increased from the 4th to 8th day and thereafter the increase was rapid till it reached a peak parasitaemic stage of 50% between the 16th and 24th day. After the 8th day as the severity of infection increased, the signet-ring forms of the parasite increased from 3.8% to 21%. The signet-rings, rods and commas measured 1.5 to 1.90 μ , 1.5 to 2.00 μ and 0.5 to 1.5 μ respectively.

The blood values of all the four theileria carrier sheep after splenectomy showed deviation from the normal range between the 6th and 10th day and these

TABLE

Mean haematological observations on *Theileria* carrier sheep before and after splenectomy.

Particulars	Before splenectomy	After splenectomy				
		4th day	8th day	12th day	16th day	20th day*
Haemoglobin (g%)	9.08 $\pm$ 0.26	9.40 $\pm$ 0.52	9.15 $\pm$ 0.29	7.92 $\pm$ 0.33	5.05 $\pm$ 0.59	3.43 $\pm$ 0.546
Packed cell volume (%)	29.70 $\pm$ 0.52	30.2 $\pm$ 0.48	29.5 $\pm$ 0.65	26.0 $\pm$ 1.78	18.0 $\pm$ 1.22	11.3 $\pm$ 1.33
Total RBC count (million/cmm blood)	10.32 $\pm$ 0.33	10.47 $\pm$ 0.51	10.15 $\pm$ 1.58	7.53 $\pm$ 1.53	4.79 $\pm$ 0.66	3.31 $\pm$ 0.46
Total WBC count (thousand/cmm blood)	11.84 $\pm$ 0.52	11.99 $\pm$ 0.74	13.23 $\pm$ 0.83	15.29 $\pm$ 0.75	21.12 $\pm$ 1.61	24.14 $\pm$ 0.95
Lymphocytes (%)	55.3 $\pm$ 1.38	57.0 $\pm$ 4.70	55.5 $\pm$ 1.85	45.75 $\pm$ 1.21	39.5 $\pm$ 3.97	28.0 $\pm$ 3.21
Monocytes (%)	4.05 $\pm$ 0.40	7.50 $\pm$ 1.70	12.0 $\pm$ 4.06	28.75 $\pm$ 4.13	37.75 $\pm$ 2.36	51.33 $\pm$ 1.20
Neutrophils (%)	35.7 $\pm$ 1.6	32.5 $\pm$ 2.06	29.25 $\pm$ 5.54	23.5 $\pm$ 4.51	21.0 $\pm$ 4.04	19.0 $\pm$ 2.51
Basophils (%)		Observations not consistent				
Eosinophils (%)	3.55 $\pm$ 0.35	1.75 $\pm$ 0.25	2.75 $\pm$ 0.63	1.75 $\pm$ 0.25	1.75 $\pm$ 0.25	1.66 $\pm$ 0.33

* Observations on 3 splenectomized carrier sheep.

changes were in correspondance with the rate of recrudescence of theileria parasites in blood. The mean haematological observations are shown in the Table. Of the four, sheep no. 2 died on the 16th day and sheep no. 1 and 3 died on the 20th day. But sheep no. 4 reacted to splenectomy with all the typical haematological changes and showed improvement in blood values after peak parasitaemia on 24th day and then recovered.

The minimum haemoglobin and packed cell volume levels in the splenectomized theileria carrier sheep were 2.3 g % and 10% respectively with the rapid fall in total erythrocyte count ranging from 2.45 to 4.00 million/cmm blood and these changes were in relation to the extent of parasitaemia. Increase in leucocytes was evident in all the four sheep between the 10th and 14th day following splenectomy and the maximum leucocyte count ranged from 19.98 to 26.8 thousand/cmm blood. The distribution of leucocytes showed the preponderance of

monocytes which was in accordance with the report of Raghavachari and Reddy (1959) who noticed leucocytosis with relative monocytosis in natural theileriasis among sheep, but contrary to Neitz (1956) and Hagan and Bruner (1966) who reported higher lymphocyte production in *Theileria ovis* infection among sheep.

Development of anaemia in theileriasis of sheep is common and in the present studies also, severe anaemia was observed by the reduction in haemoglobin level, packed cell volume and the total erythrocyte count in all the four splenectomized theileria carrier sheep.

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