PATHOLOGY OF SALMONELLOSIS IN RABBITS

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An outbreak of salmonellosis in rabbits has been reported by Krishna Iyer and Uppal (1956). They described the gross pathology, blood picture and histopathology comparing the same with lesions seen in rabbits used for rinderpest lapinised vaccine production.

A spontaneous outbreak of salmonellosis in rabbits is reported here, due to paucity of literature in India.

GROSS PATHOLOGY

During the period from November 1969 to April 1970, 105 apparently healthy young rabbits died suddenly out of about 220 rabbits maintained at the Institute of Veterinary Preventive Medicine, Ranipet. The fur around the perineal region of the dead ones was soiled with faeces. In almost all the rabbits the tracheal mucosa was haemorrhagic. Liver was congested and friable. The spleen was moderately enlarged in rabbits that died early in the outbreak and atrophied in a number of animals which died later. Lungs were congested and collapsed with emphysema in adjacent areas. In two cases only, pneumonia lesions were observed. Small intestine showed catarrhal inflammation. The mesenteric lymph nodes were normal. In only one autopsy, which was the earliest to be noticed, suppurative lesions were seen around the uterus. Intestinal loops were covered by purulent materials and adherent to the capsule of the liver. The serous surface of intestinal loops which was matted together could only be separated with difficulty.

HISTOPATHOLOGY

In almost all the cases focal areas of necrosis were seen in the liver (Fig. I) particularly around the central vein or immediately beneath the capsule. In a number of cases lymphocytic infiltration had occurred in these areas giving rise to presence of so called “paratyphoid nodules”. The hepatic cells showed cloudy swelling and/or fatty changes and in many livers congestion with sinusoidal distension was noticed.

An increase in the red pulp was seen in the enlarged spleen. At the periphery of ellipsoids, large mononuclears with ingested blood pigments were seen. In a few cases multinucleated cells with 4-5 large nuclei were also seen. In the atrophied spleens ellipsoids were less densely packed, and there was considerable reduction in the red pulp. Kidney showed evidence of cloudy

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swelling and mild fatty changes in the tubular epithelium. Lung sections showed congestion, collapse and/or emphysema. In the two cases wherein pneumatic lesions were observed, the exudate was of a catarrhal type. In one, the lesion had extended into the pleura resulting in pleuro-pneumonia.

Small intestinal mucosa showed evidence of acute catarrh; the superficial layers showed necrosis and marked desquamation; submucosal vessels were congested. The cells of crypts also showed marked necrobiosis changes (Fig 2). A mild recticuloendothelial hyperplasia was noticed in the mesenteric lymph nodes.

Cloudy swelling of heart muscle fibres was only seen in most cases. In one case, there was evidence of non-suppurative type of acute myocarditis. Intermuscular fibres there was an extensive infiltration of lymphocytes replacing parts of muscle fibres. Marked congestion and engorgement of vessels in the sub-mucosa were seen in trachea. There was considerable seepage of RBCs which were seen adherent to the mucosa; superficial layers or mucosa showed evidence of necrosis. Congestion of vessels in the medulla and vacuolation of cells in the Zone fasciculata were seen in the adrenals. Epithelial cells of uterus and urinary bladder appeared ballooned. In the uterus desquamation of surface epithelium was also noticed and in one case with suppurative lesions, purulent material was seen on the serosa extending to the muscularis in some areas.

From most of the animals *Salmonella typhimurium* was isolated in pure cultures from liver, gall bladder, intestines and spleen.

**DISCUSSION**

In young rabbits, the disease was acute with severe mortality. Suppurative lesions were seen in an adult rabbit. It is probable that such adult rabbits are the foci of infection from which the entire flock may get infected. The lesions and the fact that the organisms could be isolated from a number of organs in the same autopsy indicated that the deaths in all probability were due to septicaemia. The lesions in rabbit were different from those encountered in guinea-pig in that the chronic necrotic lesions reported by Jayaraman *et al* (1964) were never seen in the spleen. Krishna lyer and Uppal (*loc. cit.*) noticed petechiae on the serosa and mucosa, pinhead sized caseo-necrotic areas over the Peyer's patches and enlarged mesenteric lymph nodes, while in this study catarrhal inflammation was seen and lymph nodes were grossly normal. The spleen was enlarged, as described by them, in the earlier deaths, but this was not a constant finding, since the spleen was found very much atrophied in the animals which died later.
SUMMARY

Pathology of salmonellosis in a flock of rabbits is recorded. The characteristic histological lesions appeared to be foci of necrosis in liver and an acute catarhal enteritis together with cloudy swelling and/or fatty changes in other organs like kidney, heart and adrenals.

Spleen which was moderately enlarged in the earlier cases was definitely reduced in size in the deaths that took place near about the end of the outbreak.

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REFERENCES


Fig. 1  
Section of Liver showing numerous necrotic foci—H & E. x 60

Fig. 2  
Section of intestine showing marked desquamation and necrosis of superficial layers—H & E. x 60