Chemical nature and histopathology of *Setaria cervi*

Infection has been studied in the laboratory model, white rats. Adult worms collected from the naturally infected buffaloes were implanted via laparotomy in the rats. Each rat received 1 female and 2 male worms in primary infection. Microfilariae appeared in the blood circulation after a latent period of 7-2 days and persisted up to a duration of 63-5 days. The infected rats, after disappearance of microfilariae, were challenged again with 3 male and 5 female worms to study the parasitic activity during the secondary infection phase. Worms survived in the host body from 1-4 weeks and altered the biochemical constituents of blood and tissues. Host response to infection is best expressed by the change in the biochemical constituents of blood, which may serve as a tool in the diagnosis of various diseases. Quantitative estimations of various constituents in control, primary and secondary infection revealed an increase in protein, globulin, glucose, alkaline phosphatase, 56-1 and 56-2 and decrease in albumin, cholesterol, calcium, phosphorus, potassium and acid phosphatase.
Alteration in tissue biochemical constituents equally reflects the characteristic of infection. Biochemical constituents of liver, lungs, spleen and kidneys were estimated in control primary and secondary infection. Observations revealed a decrease in protein content of liver, while that of lungs, spleen and kidneys increased in primary infection. In secondary infection the content decreased in all the organs. Glycogen value decreased following primary and secondary infection, but calcium and inorganic phosphorus increased. Total acid soluble phosphorus of liver and lungs was decreased while that of spleen and kidneys increased in primary infection. Following secondary infection a decrease was observed in liver and kidneys, while slight increase was indicated in lungs and spleen. Lipid phosphorus was found to increase in liver, lungs and spleen both in primary and secondary infection except a decrease in liver during secondary infection. A decrease was also found in kidney both in primary and secondary infection. In primary infection pyruvic acid content was found to increase in all the four organs. However, in secondary infection this content decreased in liver and spleen but increased in lungs and kidneys. Lactic acid content of all the organs was found to increase in primary infection, except the lungs where the value was found to increase.
The implanted worms were found to invade liver, lungs and heart during the course of infection. These were also found embedded in peritoneum and intestinal mesenteries and genital organs. Caseated and noncaseated stages of the parasite were also found into the peritoneum. In extreme cases worms transformed into knot like structures. Histological examination revealed worms located in cross sections of mesenteries and liver, with heavy infiltration of eosinophils around the worm. Death of the parasite was followed by the activity of the tissues and increased inflammatory reaction.

Effects of host on the parasite were studied by comparing the histochemical localization of various constituents (protein, glycogen, alkaline phosphatase and calcium) of the worm before and after transplant. Glycogen content was absent from the cuticle and subcuticle of musculature, microfilariae and boundary wall of uterus were found to be rich in glycogen in the worms recovered from natural host. After transplant, glycogen value was decreased from the musculature, but was found localized in the cuticle. Protein was present in all the tissues of the worms. Alkaline phosphatase was present in subcuticular region, base of the muscles and the embryos, but much change was observed in protein and alkaline phosphatase contents after transplant. Calcium was rich in the cuticle, and slight localization was also observed in embryos and boundary walls of uterus. Musculature was devoid of calcium. Calcium content was found to increase in the transplanted worms.