

Ultrastructural Changes in Intestinal Microvasculature of Infant Rats
After Infection with Rotavirus

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Rotavirus infection is the most common enteric diseases resulting in diarrhea. Changes in the microcirculation of intestines contribute to the pathophysiology of diarrheal diseases. The aim of this study was to find the morphological changes in the endothelial cells of intestinal microvasculature in infant rats developing diarrhea in response to Rhesus Rotavirus (RRV). Twenty-six, five-day-old Wistar rats were used. Eighteen rats each were inoculated orogastrically with 1 ml of RRV concentrate; and 8 rats were given equal volume of sterile saline as control. Animals were observed for diarrhea 2 hourly for the first 12 hours and daily for 6 days. Two to four rats were sacrificed at various time points of post infection. Tissue samples were taken from proximal and distal small intestine, caecum and colon and processed for electron microscopy. Blood vessels in the mucosa and sub-mucosa were studied. Seventy one percent of rats had diarrhea at 120 hours post infection. Ruffling of the luminal membrane of endothelial cell, vacuolation of cytoplasm, swelling of endothelial cell, swelling of organelles, rarefaction and disruption of cytoplasm were noted. Capillaries of rats infected with rotavirus were severely damaged and changes were more prominent in the colon. Significant damage was seen in the arterioles of the distal small intestines. Damage to venules was more in the caecum and colon. The endothelial damage began at 12 hours and continued till 144 hours post infection. The microvascular changes in our study would be useful in the mechanisms and prevention methods in rotavirus infection.

Keywords: electron microscopy, rotavirus, endothelium, microvasculature, intestine