Intestinal microvascular endothelial injury in rotavirus infected neonatal rats

[1]Sakunthaladevi A., [1]Suganthy R., [2]Bindhu MS., [2]Kang G. and [1]Koshi R.
Departments of [1]Anatomy and [2]Gastrointestinal Sciences, Christian Medical College, Vellore.

Background: Altered villous microcirculation leading to villus ischaemia and impaired water absorption has been implicated in the pathogenesis of rotavirus diarrhea (Osborne, et al. 1991). This study investigates changes in the small and large intestinal microvascular endothelial cells in 5 day-old/ neonatal rats inoculated with Rhesus rotavirus (RRV) orogastrically. **Methods:** Twenty percent of infected rats developed diarrhea within 24 hours and 60% by 72 hours. Tissue samples were taken from proximal and distal small intestine, caecum and colon of 2 rats each at 24 and 72 hours post inoculation, and one control at each time point. Blood vessels in the mucosa and submucosa were examined under the electron microscope. **Results:** Ultrastructural changes were seen in the endothelial cells of the microvasculature. Endothelial cells were swollen, and this swelling was associated with rarefaction of the cytoplasm. Marked ruffling of luminal membrane was seen. The lumen was constricted in places due to swelling of endothelial cell and resulted in stagnation of blood flow. There were large numbers of platelets in the vascular lumen, and platelets adhering to the vessel were also seen. Capillaries were most severely affected. Maximum changes were seen in the colon of 72 hours postinfection.