Fungal Infection Directory

Hyperbaric oxygen ameliorates bacterial translocation in rats with mechanical intestinal obstruction.

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PURPOSE:

The aim of this study was to demonstrate bacterial translocation after experimentally induced intestinal obstruction as well as investigate the preventive effects of hyperbaric oxygen on obstruction-induced bacterial translocation in rats. METHODS: Forty Wistar-albino male and female rats were used. Although no procedure was done in the control group (n = 8), hyperbaric oxygen treatment under 2.5 atm absolute for 90 minutes daily was applied for two days in the hyperbaric oxygen group (n = 8). In the sham group (n = 8), after laparotomy the small bowel was only handled gently, and tissue sampling was done 48 hours later. In the obstruction group (n = 8) the ileum was ligated by 5-0 polypropylene just 5 cm proximal to the ileoceleal valve. In the obstruction and hyperbaric oxygen group (n = 8), after obstruction hyperbaric oxygen treatment was applied. Forty-eight hours after the procedures, tissue samples from small bowel, mesenteric lymph nodes, spleen, and liver were taken and 1 ml of blood from the portal vein was withdrawn. All samples were cultured for microbiologic examination.

RESULTS:

Hyperbaric oxygen treatment significantly reduced the endogenous bacterial overgrowth in the small intestine of normal rats. Endogenous bacteria in the small intestine were significantly increased in the obstruction group, and the presence of bacterial overgrowth was proven by bacterial presence on mesenteric lymph nodes, spleen, liver, and blood. Hyperbaric oxygen treatment significantly reduced the endogenous bacterial overgrowth in the small intestine and prevented the bacterial translocation almost completely in obstruction-induced rats.

CONCLUSIONS:

Intestinal obstruction causes bacterial overgrowth and translocation. Hyperbaric oxygen treatment prevents the bacterial translocation effectively.

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