

The Effect of Iloprost in the Healing of Colonic Anastomosis in Rats under Chemotherapy with Irinotecan

Stergios Arapoglou¹, Apostolos Kambaroudis¹, Ioannis Grivas², Georgios A. Delis³, Christos Karkos¹, Konstantinos Ballas¹, Georgios Zacharioudakis¹, Panagiotis Petras¹, Michael Aftzoglou¹, Ioannis Gouziotis¹, Georgios Koliakos⁴, Maria Karakwta⁴, Georgios Hahalis⁵

¹Fifth Surgical Department, Medical School, Aristotle University of Thessaloniki, Thessaloniki, Greece

²Anatomy Histology and Embryology School of Veterinary Medicine, Aristotle University of Thessaloniki, Thessaloniki, Greece

³Laboratory of Pharmacology, School of Veterinary Medicine, Aristotle University of Thessaloniki, Thessaloniki, Greece

⁴Department of Biochemistry, Medical School, Aristotle University of Thessaloniki, Thessaloniki, Greece

⁵Department of Histopathology, Hippokratio General Hospital, Thessaloniki, Greece

Abstract

Purpose: We have investigated the possible positive effect of iloprost in the healing of colonic anastomosis, in rats under intraperitoneal chemotherapy with irinotecan.

Method: Forty male Wistar rats have been divided into four groups. They underwent a partial colectomy and a termino-terminal anastomosis. They were administered, intraperitoneally, saline (group 1), irinotecan (group 2), iloprost (group 3), or irinotecan and iloprost (Group 4). After the sacrifice of the animals what followed was an autopsy, a macroscopic examination and the measurement of the anastomotic rupture pressure. A portion of the anastomosis was sent over for histological examination and determination of hydroxyproline levels.

Results: The frequency of the leakage from the anastomosis was considered as significantly increased in group 2 compared with the other groups. In group 2, a significantly greater degree of adhesions, compared to all the remaining groups, was observed. The bursting pressure of the anastomosis was significantly lower in group 2, as compared with all the remaining groups, and significantly increased in the group 4 compared with group 2. Leukocytosis, fibroblasts, the neocollagen and the levels of hydroxyproline in group 4 showed significantly increased values, compared with group 2. The angiogenesis was significantly increased in groups 3 and 4 compared with group 2.

Conclusions: Intraperitoneal administration of iloprost after colectomy, termino-terminal anastomosis and intraperitoneal administration of irinotecan promotes the healing process of the colon anastomoses as it competes the inhibitory effect of irinotecan.

Key words: colonic anastomoses healing, irinotecan, iloprost, prostaglandins