tional state, the localization (left colon or right colon) and type of operation, the patient's age, the presence of obstruction and whether the operation was elective or emergency, which may effect the success of anastomotic healing have been studied [1-3].

Normal wound healing and tissue repair are controlled by a series of regulatory peptides which are released in response to specific stimuli and interact in a refined and coordinated manner. These peptides or growth factors have both local and systemic affect on cells [4,5]. One of the growth factors that are thought to have a positive effect on the wound healing process is erythropoietin which is a haematopoietic growth factor [6-10]. In an experimental study that examines the effect of erythropoietin (EPO) on left colonic anastomotic healing, administration of EPO appears to have beneficial positive effects on healing rate and breaking strength of large bowel anastomoses in rats [9,10]. There is no study dealing with the effects on healing after obstructive states.

Our aim was to investigate the possible effects of EPO on the healing of experimental left colonic anastomosis under both obstructive and non-obstructive states.

Methods

Experimental animals

The Study was approved by the animal ethics committee of Ankara University.

All the rats were obtained from the same breeding centre and were placed in a temperature-controlled environment (Ankara University Medical School Experimental Study Centre). The rats were fed with standart rat chow diet before the operation. No preoperative preparation or fasting period was tried. The rats were operated under general anaesthesia using an intramuscular injection of 35 mg/kg (*50 mg/ml flagon*) ketamin hydrocholoride (*Ketalar®, Parke Davis, Levent-İstanbul, Turkey*,) and 2 mg/kg xylasin (*Rhompun®, Bayer Türk Kimya, Şişli-İstanbul, Turkey*).

Surgical procedure

Forty male Wistar albino rats weighing 200–250 g were divided into four groups of ten animals, three experimental and one control. Through a 3 cm midline laparotomy, the left colon was found and mobilised and a two cm segmental colonic resection and primary anastomosis was performed just two cm proximal to the peritoneal reflection both in group I and III.

The left colon was completely ligated at two cm above the peritoneal reflection using 5/0 polypropylene in group II and IV. 24 hours later animals were reoperated and a two cm segmental colonic resection and primary anastomosis was performed.

All anastomosis were performed using interrupted 6/0 polypropylene sutures, (*Prolene, Ethicon, UK*) in a single-layer, end to end and extramucosal manner. The abdomen was closed with interrupted 3/0 silk sutures (*Dogsan, Trabzon, Turkey*).

Animals in Group III and IV were given 500 IU/kg/day of recombinant erythropoietin (*Eprex®, Santa-Farma, Sweden*) subcutaneously for seven days following the operation. Rats in Group I and II were given isotonic sodium chloride injection subcutaneously for seven days following the operation. Study design is shown in figure 1.

Rats were allowed to have free access to water alone during the first postoperative 12 h period and fed regularly with standard chow afterwards. No antibiotics were given.

Bursting pressure measurement

Seven days after surgery all rats underwent re-laparotomy under general anaesthesia for the determination of the *in vivo* bursting pressure(BP) prior to the death (by cardiac puncture) without interruption of the normal mesenteric blood supply or adhesions to the anastomosis using the modification of the technique described by Jiborn et al [11,12]. Anastomotic bursting pressure (ABP) was measured by passing a catheter per *anum* up to the area of anastomosis. The lumen of the colon was cleaned of feacal content by gentle wash-out with saline. Without disturbing the adhesions, the bowel (2 cm above and below the anastomosis) was tied with a 0 silk ligature. The distal catheter was connected via a pressure transducer to recorder (*Datex-Ohmeda CS/3, Helsinki, Finland*). The bowel was infused with a continuous flow of physiological saline (1.5 ml/min). The pressure in the bowel was monitored during injection and the bursting pressure (mmHg) was taken as the maximum pressure achieved during the injection phase.

After sacrification, the anastomotic site was resected and divided into two parts vertically. One used for hydroproline measurement and the other placed in 10% formaline for histopathological examination.

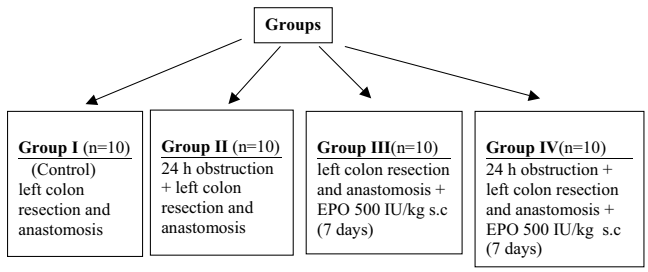

Figure 1
Study groups.