

The Peritoneal Anti-adhesion Effect and the Toxicity of PX/SA Mixture Barriers in Dogs.

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Purpose: To determine the minimum dose of PX/SA(poloxamer/sodium alginate mixture) barriers on preventing intraperitoneal adhesions and whether it has toxicity or not to the major organs.

Matrials and Methods: Twenty five healthy adult mongrel dogs (weighing 4.68 ± 1.67 kg) are divided into five experimental groups composed of five dogs respectively; negative control group (NC. Non-treated), positive control group (PC. 2% carboxymethyl chitosan solution treated), experiment 1 group (E1. PX/SA 0.25 ml/abraded area), experiment 2 group (E2. PX/SA 0.5 ml/abraded area), experiment 3 group (E3. PX/SA 1.0 ml/abraded area). Venous blood specimens were collected from all experimental animals for hematologic and biochemical ananlysis: WBC, fibrinogen, GPT, ALP, GOT, BUN, creatinine. The anti-adhesion effect was evaluated using a serosa abrasion model. The denuded ileum was coated with PX/SA mixture, carboxymethyl chitosan solution or neither. The tensile strength of the adhesion site was evaluated with tensiometer (H500DM, Hounsfield Co., UK). For histologic evaluation, tissue samples of the liver and kidney were collected from all dogs.

Results: The mean tensile strengths (gram force, gf) were 267.76 ± 108.23 gf in NC, 290.77 ± 176.25 gf in PC, 126.52 ± 81.25 gf in E1, 135 ± 83.48 gf in E2, and 134.54 ± 85.45 gf in E3 group. The tensile strength value for adhesion separation in PX/SA group was lower than that in negative control group ($p<0.05$). In E1 group, the tensil strength was decreased significantly in consideration of PX/SA dose. The values of GPT, ALP, GOT, BUN, creatinine between the control and the experimental groups showed no statistical differences. No obvious microscopic differences were noted among tissue sections obtained from all groups.

Conclusion: The results suggest that PX/SA should be effective on reducing peritoneal adhesion formation in dogs. Especially, PX/SA 0.25ml/abraded area is most effective dose.

Key words: poloxamer/sodium alginate mixture, anti-adhesion, peritoneal, toxicity, dogs

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