Heparinized Catheters May Improve Healing of the Exit Site and Reduce Infectious Complications in a Rat Model of Peritoneal Dialysis(PD)

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Heparin is not only an anticoagulant but is also known to have antiinflammatory and antimicrobial effects. The aim of this study was to evaluate whether covalent surface-heparinization of silicon catheters for PD may prevent bacterial colonization(or biofilm) and improve healing of the exit site. We performed a prospective, double-blind, randomized study in 40 SD-rats with intact kidneys, weighing 250-300 g. Heparinized catheters were implanted in 20 rats(group H) and non-heparinized catheters in 20 rats(group C). All catheters were coded and the code was not revealed until the study was completed. Dialysis exchanges were performed with intraperitoneal instillation of 25 ml of PD solution (2.5% Dianeal) twice weekly for 4 weeks through the permanent catheter. The exit sites were evaluated at two week intervals using the scoring system of Pecoits-Filho et al(PDI 18:60,1998). The extent of biofilm coverage on the intraperitoneal of the catheter, obtained at the time of sacrifice, was assessed and sonificated fluid of the catheter tip was cultured for evaluating bacterial colonization of the catheter. 27 rats completed the 4 week study(group C, n=15; group H, n=12) and were analysed. Exit-site scores in group H was lower than in group C(p=0.052) at the end of week 4. Bacterial colonization tended to be less common in group H(2 of 12 catheter) than in group C(8 of 15 catheters, 53 %; p=0.058), while biofilm and peritonitis rates were not different. In conclusion, these data suggest that heparinized PD catheters may be promising by preventing bacterial colonization and improving healing of the exit site.