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Background : We reported previously that paclitaxel coated expanded polytetrafluoroethylene (ePTFE) grafts could prevent neointimal hyperplasia and the stenosis of arteriovenous hemodialysis grafts in porcine model of graft stenosis. The aim of this study is to analyze the influence of paclitaxel coated ePTFE hemodialysis grafts around the transplanted tissues using the rabbit model.

Methods : ePTFE hemodialysis grafts were coated with paclitaxel of two different concentrations (low concentration, 0.30 $\mu\text{g}/\text{mm}^2$; high concentration, 0.57 $\mu\text{g}/\text{mm}^2$) respectively. Each of the twelve rabbits was transplanted with three ePTFE hemodialysis grafts of three different paclitaxel concentrations (control, low concentration, high concentration) under the subcutaneous layer of their backs. Six rabbits were euthanized one weeks postoperatively and the others two weeks postoperatively. We analyzed graft wall inflammation, luminal inflammation, perigraft inflammation, myofibroblast proliferation, skin necrosis or edema respectively, grading the lesions using semiquantitatively as 0 (negative), 1 (equivocal), 2 (mild), 3 (moderate), 4 (severe).

Results : At one week, paclitaxel coated graft groups had less luminal inflammation ($p < 0.05$), perigraft inflammation ($p = 0.074$) and graft wall inflammation ($p = 0.024$) than control group without paclitaxel coating. All groups showed mild tissue edema around grafts and mild to moderate myofibroblast proliferation. At two weeks, paclitaxel coated graft groups had less perigraft inflammation ($p < 0.05$), graft wall inflammation ($p = 0.061$), and myofibroblast proliferation ($p < 0.05$) than control group. All groups showed no tissue edema around grafts and improved luminal inflammation.

There were no skin necrosis in all groups during the follow up period.

Conclusion : The paclitaxel coating inhibited inflammation without skin necrosis around the transplanted ePTFE HD graft subcutaneously.

Key Words : Paclitaxel, Hemodialysis, Graft