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The Effect Of Platelet-rich Plasma Injection On Liver Regeneration After Major Hepatectomy In Rabbits

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Background : Platelets and well-known hemostasis and coagulation roles have been found to fight infections, regenerate tissues, and promote cancer growth. Recently, the new roles of platelets have been found to stimulate liver regeneration, improve liver fibrosis, and relieve liver damage. This study investigated the effect of autologous platelet-rich plasma (PRP) injection on liver regeneration after major hepatectomy in rabbits.

Methods : A total of twenty-one rabbits were randomly divided into a control group and a PRP group. Nine of them survived until harvest day. Four rabbits were control group (n=4); saline injection was injected after liver resection. Five for the PRP group (n=5); PRP was injected after liver resection. Both groups compared pre-and post-operative laboratory results, initial body weight, resected and harvested graft weight, resected and harvest graft to body weight ratio.

Results : The total survival rate after major liver resection + PRP treatment was only 42%. The subcutaneous injection method had a lower mortality rate than portal vein injection (p=0.050). Interestingly, the regenerated graft was 83 g, much more prominent in one PRP-treated rabbit than in approximately 60-70g of the other rabbits'. However, between the control and PRP-treated group, there was no significant difference in harvested graft weight (66.2 ± 5.7 vs. 66.0 ± 9.8) and harvest graft to body weight ratio (2.18 ± 0.07 vs. 2.01 ± 0.43).

Conclusions : The rabbit major hepatectomy + PRP treatment model showed relatively high mortality in this study. PRP treatment did not result in a positive effect on liver regeneration. Developing a safer model for major hepatectomy + PRP treatment should be preceded. In addition, it is necessary to investigate pure PRP, modulation of growth factors, and cytokines in PRP.

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