Autografting mesenchymal stem cells with fibrin sealant for the therapy of esophageal anastomotic fistula. [Chinese]

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Abstract:

Objective: To investigate the efficacy of MSC<inf>s</inf> autografting with fibrin sealant could for the closure of cervical anastomotic fistula. Methods: Twenty-one healthy New Zealand rabbits were involved and randomly assigned to treatment group (n = 12) or control group (n =9). After the bone marrow were aspirated, the MSCs were isolated, purified and labelled by transfection of Lenti. GFP. The rabbit models of cervical esophageal anastomotic fistula were established by leaving a caliber rubber tube inside esophageal lumen. One week later, a 0. 2 ml FS with 2 X 10⁶ GFP+ MSCs was employed to close the fistula for each animal in the treatment group, while the same procedure was performed without MSCs in the control group. MRI examination was performed to evaluate the closure of fistula after 5 weeks. All animals were killed and the esophageal tissues were collected 7 weeks later. Histology and immunohistochemistry study were performed. Results: The rabbit models of cervical anastomotic fistula were successfully established. There was no significant difference of fisutla caliber between both groups ((2. 30 +/-0. 15) mm vs (2. 20 +/- 0. 17) mm,P<0. 05), MRT exam revealed that there was only inflammation sign in the treatment group, by contrast, most of the rabbits were showed purulent infection sign which induced by persistent fistula in the control group. At the end of the study, the mortality of the treatment group and the control group were 3/12 and 5/9 (P =0.20). However, the closure rates of the fistula were 10/12 and 1/9, respectively, with significant difference between two groups (P = 0. 02). Histological study indicated that there was mild inflammation response and less collagen deposition for treatment group, compared to control group. Immunohistochemistry study further demonstrated that the autografted

MSCs colonized to the fistula and differentiated into myofibroblasts. Conclusion: Auto-transplantation of MSCs and FS can increase the closure rate of the cervical anastomotic fistula through the mechanisms of immunomodulatory, extracellular matrix reconstruction and anti-immigration effect of FS.