

## 骨髓间充质干细胞移植和动员对重症急性胰腺炎大鼠肝肾细胞凋亡的保护作用

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**中文摘要:**目的探讨自体骨髓间充质干细胞移植和干细胞动员对重症急性胰腺炎大鼠肝肾细胞凋亡的保护作用。方法腹腔注射L-精氨酸制备大鼠SAP模型, 随机分为假手术组、模型组、骨髓干细胞移植(mesenchymal stem cells, MSC)组、重组人粒细胞集落刺激因子组(G-CSF)及MSC+G-CSF组(n=48), 各组再按术后不同观察时间段分为12、24、48、72h亚组(n=12)。MSC组造模后6h经股静脉注入自体骨髓间充质干细胞1.2ml, G-CSF组造模前连续3天皮下注入G-CSF 40μg/kg, MSC+G-CSF组则联合应用, 假手术组仅腹腔注射等体积生理盐水。在术后相应时间点观察各组大鼠的死亡率, 肝肾脏组织的病理变化, 比较Bax、Bcl-2蛋白水平和细胞凋亡指数差异。结果各治疗组48h前未见死亡, 72h死亡率与模型组比较无显著差异(P>0.05); 肝脏、肾脏病理变化均较模型组减轻; 治疗组各时间点肝肾细胞Bax表达较模型组下调, Bcl-2蛋白上调, 凋亡指数较模型组有明显下降。MSC+G-CSF组24h点后Bax含量, 48h、72h点Bcl-2含量, 24h/48h点后细胞凋亡指数与MSC组和G-CSF组比较差异显著(P<0.05), MSC组和G-CSF组各时间比较无显著差异(P>0.05)。结论联合自体骨髓MSC移植与动员能有效抑制重症急性胰腺炎时肝脏和肾脏的细胞凋亡。

**中文关键词:** [重症急性胰腺炎](#) [间充质干细胞](#) [移植](#) [细胞凋亡](#)

### Protection Effect of Bone Marrow Mesenchymal Stem Cells Transplantation and Bone Marrow Stem Cells Mobilization on Liver and Renal Cells Apoptosis in Rats with Severe Acute Pancreatitis

**Abstract:** Objective To observe the protective effects of autologous bone marrow mesenchymal stem cells transplantation combined with bone marrow stem cells mobilization on liver and renal cell apoptosis in rats with severe acute pancreatitis, and explore their mechanism. Methods 240 SD rats with severe acute pancreatitis were prepared by injecting intraperitoneally with L-arginine and randomly divided into sham-operated group (n=48), model control group (n=48), bone marrow mesenchymal stem cell transplanted (MSC) group (n=48), granulocyte-colony stimulating factor treated (G-CSF) group (n=48) and MSC+ G-CSF (n=48). MSC group were prepared via injection of 1.2ml MSC to femoral vein 6 hours after SAP. G-CSF group were prepared via subcutaneous injection of G-CSF 40μg/kg for 3 days before SAP. MSC+ G-CSF group combined use of MSC and G-CSF. Sham-operated group were injected of equal volume normal saline. According to the difference of time points after operation, the rats in each group were subdivided into 12, 24, 48 and 72h groups (n=12). At various time points after operation, the mortality rate, pathological changes, expression levels of Bax, Bcl-2 proteins and apoptosis indexes of liver and renal were observed respectively. The contents were determined to compare the difference of each group by variance analysis. Results Compared to the respective model group, the mortality rates of all treated group at 72h showed no difference (P>0.05), but no rats died before 48h. The pathological injuries of liver and renal cells were relieved compared to control group. The expression of Bax in liver and renal cells decreased and Bcl-2 protein increased. The cell apoptosis indexes decreased significantly. The difference of bax protein after 24h, Bcl-2 protein in 48, 72h, apoptosis index after 24 or 48h was significant compared to MSC and G-CSF group (P<0.05), but no marked difference was observed between the latter two groups (P>0.05). Conclusion Autologous bone marrow mesenchymal stem cells transplantation combined with bone marrow stem cells mobilization can significantly protect liver and renal cells apoptosis from severe damage in the progress of severe acute pancreatitis.

**keywords:** [Severe acute pancreatitis](#) [Mesenchymal stem cell](#) [Transplant](#) [Apoptosis](#)

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