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脊髓损伤继发骨质疏松大鼠骨髓基质细胞OPG、RANKL基因表达特点

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摘要：

目的：了解脊髓损伤继发骨质疏松大鼠骨髓基质细胞成骨能力及其OPG、RANKL基因表达的特点，以探索脊髓损伤继发骨质疏松发病机制。方法：60只SD大鼠按体重随机分为6组，对20只采用脊髓横断法在T10处横断脊髓制作完全性SCI模型，分为SCI 6周和12周组；20只在同水平处切断棘突、椎板制作假手术对照组（sham），分为Sham 6周和12周组；另20只分为正常6周和12周对照组。分别在SCI后6周和12周时取材，行骨髓基质细胞培养，并检测其成骨能力及OPG、RANKL基因表达。结果：脊髓损伤6周、12周时，大鼠骨髓基质细胞成骨能力无明显变化，其OPG基因表达无明显改变；脊髓损伤6周时，其RANKL基因表达和RANKL／OPG明显升高。结论：骨髓基质细胞RANKL基因表达和RANKL／OPG升高可能是脊髓损伤后早期大鼠发生骨质疏松的主要原因。

关键词：脊髓损伤 骨质疏松 骨髓基质细胞 骨保护蛋白 RANKL 基因表达

Osteoprotegerin, RANKL gene expression of bone marrow stromal cells in rats with osteoporosis secondary to spinal cord injury

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Abstract:

Objective: To explore the osteogenesis and OPG?RANKL gene expression of bone marrow stromal cells(BMSCs) in rats with osteoporosis(OP) secondary to spinal cord injury(SCI). Method:Sixty SD rats were randomly divided into control group(40 cases) and experiment group (20 cases). The rats of experiment group were transected at the tenth thoracic vertebra to make model of SCI, and control group included normal control group and sham operation group in which the rats underwent a sham procedure.All rats were sacrificed at 6 weeks or 12 weeks postoperation. BMSCs were cultured to be measured their alkaline phosphatase(ALP) activities by Lowry and mineral nodule formation by Von Kossa stain.The OPG and RANKL gene expression in BMSCs were analysized by RT-PCR. Result:After 6 weeks postoperation,compared to the control group, the RANKL gene expression was elevated and the RANKL/OPG ratio was increased in BMSCs of rats with OP secondary SCI. The other data was not changed significantly. Conclusion:The elevation of RANKL gene expression and RANKL/OPG ratio in BMSCs may be the main cause of OP after early SCI in rats.

Keywords:spinal cord injury osteoporosis bone marrow stromal cells osteoprotegerin RANKL gene expression

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