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椎体成形术中聚甲基丙烯酸甲酯引起犬急性肺栓塞

Analysis of polymethylmethacrylate leading to canine acute pulmonary embolism in vertebroplasty

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中文摘要:

目的 观察椎体成形术中聚甲基丙烯酸甲酯(PMMA)静脉渗漏造成肺栓塞的严重程度与漏入量的关系。方法 15只成年家犬随机分为A、B、C三组,静脉麻醉后分别经股静脉注入PMMA骨水泥 0.5、1.0、2.0 ml;于注入前、后行胸部CT平扫、肺动脉造影,测肺动脉压,行血气分析,于术后2 h处死实验犬行病理检查。结果 C组氧分压在注入PMMA骨水泥10 min后显著下降,二氧化碳分压在注入1 min后显著上升;B、C组平均肺动脉压在注入1 min、10 min时显著上升,差异均有统计学意义($P<0.05$);其余各组间差异无统计学意义($P>0.05$)。结论 PMMA进入下腔静脉导致肺栓塞的严重程度可能与漏入量有关,椎体成形术中大剂量的渗漏可导致呼吸功能障碍。

英文摘要:

Objective To study whether the leakage of polymethylmethacrylate (PMMA) can lead to pulmonary embolism in vertebroplasty (VP), and to observe the correlation of embolism degree with the doses of PMMA. **Methods** Fifteen canines were randomly divided into 3 groups: group A, B, C, and were injected 0.5, 1.0, 2.0 ml PMMA into the femoral veins, respectively. Before and after the injection, chest CT and angiography of pulmonary artery were performed, the pressure of pulmonary artery was measured, and the blood gas analysis of femoral artery was done. At last, the canines were euthanized and examined and histologically after HE-stained. **Results** In group C, the pressure of O_2 decreased obviously, and significant difference was found between before and 10 min after injection ($P<0.05$). The pressure of CO_2 increased quickly in group C, significant difference was detected between before and 1 min after injection ($P<0.05$). Pressure of pulmonary artery in both group B and C were significantly different between before and after injection ($P<0.05$). **Conclusion** The leakage of PMMA can lead to pulmonary embolism. The degree of pulmonary embolism is correlated to the doses of PMMA. The large dose of bone cement leakage can lead to disorder of respiratory function.

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