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An experiment study of lung ischemia-reperfusion injury of pulmonary surgery in rabbit model

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摘要

Background and objective The blocking of pulmonary vessels, including the blocking of pulmonary artery and pulmonary circulation, is always applied in the surgical treatment of locally advanced no-small cell lung cancer. However, the blocking of pulmonary vessels will induce lung ischemia-reperfusion injury (LIRI). The aim of this study is to establish pulmonary vessels blocking model in rabbit and to investigate the LIRI in pulmonary surgery. Methods 114 New Zealand rabbits were randomly divided into 3 groups: group?, control group; group?, block left pulmonary artery; group?, block left pulmonary artery and vein. After the time of opening chest (group?), 1 h ischemia and 1 h, 2 h, 4 h, 6 h, 24 h reperfusion, the changes of arterial oxygen partial pressure in left pulmonary vein (PaO2) and the content of MDA in left lung tissue were observed. Then the water content of left lung and pathological study was recorded. Results Homodynamic parameters were stable in all 3 groups. There were significant differences in PaO2, MDA and wet/dry ratio of the lung tissue between? and other two groups at the time of 1 h ischemia and 1 h, 2 h, 4 h, 6 h reperfusion (P < 0.05 and P < 0.01), but there was no significant difference between group? and group? (P > 0.05), and there was no significant difference among the three groups after 24 h reperfusion (P >0.05). Pathological study revealed that similar injury changes happened between group? and group ?, and the obvious injury happened at the time of 4 h reperfusion. At the time of 6 h reperfusion pathological changes in both group? and group? began to recover, and completely recover after 24 h reperfusion. Conclusion The lung ischemic-reperfusion injury caused by blocking pulmonary artery is similar to that caused by blocking pulmonary artery and veins. It is safe to previously block pulmonary vessels within 1 h during pulmonary surgery.

关键词

Ischemia-reperfusion injury; Acute lung injury; Pulmonary circulation; Animal experimentation

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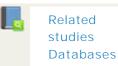




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