عنوان مقاله:

Time-dependent changes of autophagy and apoptosis in lipopolysaccharide-induced rat acute lung injury

محل انتشار:

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خلاصه مقاله:

Objective(s): Abnormal lung cell death including autophagy and apoptosis is the central feature in acute lung injury (ALI). To identify the cellular mechanisms and the chronology by which different types of lung cell death are activated during lipopolysaccharide (LPS)-induced ALI, we decided to evaluate autophagy (by LC۳-II and autophagosome) and apoptosis (by caspase-۳) at different time points after LPS treatment in a rat model of LPS-induced ALI. Materials and Methods: Sprague-Dawley rats were randomly divided into two groups: control group and LPS group. ALI was induced by LPS intraperitoneal injection (۳ mg/kg). The lung tissues were collected to measure lung injury score by histopathological evaluation, the protein expression of LC۳-II and caspase-۳ by Western blot, and microstructural changes by electron microscopy analysis. Results: During ALI, lung cell death exhibited modifications in the death process at different stages of ALI. At early stages (۱ hr and ۲ hr) of ALI, the mode of lung cell death started with autophagy in LPS group and reached a peak at ۲ hr. As ALI process progressed, apoptosis was gradually increased in the lung tissues and reached its maximal level at later stages (۶ hr), while autophagy was time-dependently decreased. Conclusion:These findings suggest that activated autophagy and apoptosis might play distinct roles at different stages of LPS-induced ALI. This information may enhance the understanding of lung pathophysiology at the cellular level during ALI and pulmonary infection, and thus help optimize the timing of innovating therapeutic approaches in future experiments with this model.

کلمات کلیدی:

Acute lung injury, Apoptosis, Autophagy, Lipopolysaccharide