

S. aureus对PMN粘弹性和细胞骨架影响的研究

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利用微管吸吮技术和免疫组化染色,研究了在不同浓度金黄色葡萄球菌及其代谢液作用下多形核中性粒细胞粘弹性的变化,以及在金黄色葡萄球菌作用下PMN细胞骨架的改变。结果发现金黄色葡萄球菌代谢液对PMN粘弹性无显著影响,而金黄色葡萄球菌悬液则对PMN的粘弹性有显著影响,各参数值随金黄色葡萄球菌浓度的增加而显著递增,至金黄色葡萄球菌浓度达10倍PMN浓度时趋于稳定;微丝和微管的免疫组化染色发现其细胞骨架形态发生改变,定量分析其光密度值有显著增加。这些结果表明:PMN受金黄色葡萄球菌刺激后,细胞骨架发生了重新组装和骨架蛋白的表达,使PMN刚性和粘性均增加,促进在局部微循环中滞留粘附,发生炎症反应。

INVESTIGATION ON THE INFLUENCE OF STAPHYLOCOCCUS. AUREUS ON THE VISCOELASTICITY AND CYTOSKELETON OF RAT PMN

Using micropipette aspiration technique and immunohistochemistry, the effects of staphylococcus. aureus and its metabolite on the rheological characteristics and cytoskeleton of PMN were studied. Results show that S. aureus metabolite has no significant effects on the viscoelastic coefficients, but S. aureus can affect the viscoelastic coefficients of PMN significantly and the value of k_1 , k_2 and μ are related to the concentrations of S. aureus directly. Meanwhile, the morphological studies show that the structure of microfilament and microtubule system changed, and the mean optical density of AODs also increases significantly. These results show that the PMN has reassembled and reconstructed its cytoskeleton and has much protein expression of actin and tubulin when activated immunologically. Thus, the deformability of PMN decreases and viscosity of PMN increases remarkably, which is favorable to the sequestration and adhesion of PMN in microcirculation.

关键词

金黄色葡萄球菌(Staphylococcus. aureus); 多形核中性粒细胞(Polymorphonuclear neutrophils); 粘弹性(Viscoelasticity); 细胞骨架(Cytoskeleton); 微管吸吮技术(Micropipette aspiration technique); 光密度(Optical density); 大鼠(Rat)