

Value of Peripheral Perfusion Index in the Assessment of Reactive Hyperemia in Septic Patients

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Objective

To explore the changes of peripheral perfusion index (PI) during forearm vascular occlusion test (VOT) and examine its evaluative value of reactive hyperemia in septic patients.

Methods

Twenty-one patients with septic shock, 21 postoperative ones without infection and 18 health volunteers were prospectively recruited to undergo vascular occlusion test. An arrest of forearm blood flow was applied for 3 min with a sphygmomanometer inflated to a pressure approximately 30 mm Hg greater than systolic pressure around forearm. PI was measured and recorded continuously by conventional pulse oximetry during VOT.

Results

(1) In all subjects, the PI values decreased to zero during ischemic period. There were no changes in heart rate or blood pressure between baseline and reperfusion. The maximum PI (PI-max) after a release of pneumatic cuff was significantly higher than baseline PI; (2) The change rates of PI-max and PI were significantly lower and the time to PI-max was longer in septic group after reperfusion; (3) A negative relationship existed between PI change rate and sequential organ failure assessment (SOFA) score in septic group.

Conclusions

PI may be used to assess vascular reactive hyperemia in critically ill patients. And the capacity of peripheral vascular reactive hyperemia decreases in septic patients.