Increase in circulating ACE-positive endothelial microparticles during acute lung injury

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Circulating ACE+ endothelial microparticles from pulmonary microvascular endothelial cells could be a marker for evaluating the injury of pulmonary microvascular endothelial cells and a prognostic marker for developing ARDS in septic patients http://bit.ly/2GeX7ap


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ABSTRACT Circulating endothelial microparticles (EMPs) are considered to be markers of endothelial injury, and lung microvascular endothelial cells express higher levels of angiotensin-converting enzyme (ACE). The aim of this study is to examine whether the number of ACE+ microvascular EMPs could be a prognostic marker for the development of acute respiratory distress syndrome (ARDS) in septic patients. The numbers of EMPs and ACE+ EMPs in the culture supernatant from human microvascular endothelial cells, as well as in the blood of mouse lung injury models and septic patients (n=82), were examined using flow cytometry.

ACE+ EMPs in the culture supernatant from pulmonary microvascular endothelial cells increased after exposure to an inflammatory stimulus. In the mouse lung injury models, the circulating ACE+ EMPs and ACE+ EMP/EMP ratio were higher than in the controls (p<0.001). The ACE+ EMP/EMP ratio was correlated with the wet/dry lung ratio (r=0.775, p<0.001). The circulating ACE+ EMPs and ACE+ EMP/EMP ratio on admission were significantly increased in septic patients who developed ARDS compared with septic patients who did not (p<0.001).

Therefore, circulating ACE+ EMPs may be a prognostic marker for the development of ARDS in the septic patients.