**Objectives** To find out the differences of cell adhesion molecule-related mRNAs expression between symptomatic pulmonary embolism (PE) and control group, and to investigate the interactions among activated leukocytes, platelets and endothelial cells.

**Methods** Whole human gene chip was applied to detect cell adhesion molecule-related mRNAs expression in symptomatic PE and control group, and then statistical analysis was performed.

**Results** In patients with PE, the expression of most mRNAs related to integrins which located in leukocytes and platelets was significantly up-regulated; the expression of mRNAs related to L-selectin and P-selectin glycoprotein ligand was significantly up-regulated, while the expression of mRNA related to E-selectin was significantly down-regulated; the expression of mRNAs related to classic cadherins and protocadherins tended to down-regulate as a whole, and the expression of mRNA related to vascular endothelial cell cadherin was significantly down-regulated; the expression of mRNAs related to the immunoglobulin superfamily had no obvious difference between the two groups.

**Conclusions** The results demonstrated that, in symptomatic PE patients, the adhesion of leukocytes and platelets were enhanced; the activation of endothelial cells was obviously weakened; the adherens junctions among endothelial cells were weakened, with the endothelium becoming more permeable.