Protecting effect of endothelial progenitor cells transplantation on sepsis rat

WANG Wei¹, LIU De-hong², XU Chang-qiong², LI Zhuo-cheng¹, PEI Xiao-gai¹

(1. Clinical laboratory; 2. Emergency Department, The Second People's Hospital of Shenzhen City, Guangdong, Shenzhen 518035, China)

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[Author]; WANG Wei (1974 - ), Male, M. M., Deputy chief technician, Tel: 13510224282, E-mail: wangwei2683@163.com,

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View from specialist: It is creative, and of certain scientific and educational value.

[ABSTRACT] Objective: To investigate the protecting effects of endothelial progenitor cells transplantation on sepsis in rats. Methods: Sepsis rat model was constructed by cecal ligation-pereferation (CLP) and endothelial progenitor cells were transplanted through rat tail vain. Rats with sham operation were used as control. Mean arterial pressure, pulse rate, respiratory rate, and anal temperature were monitored 24 hours after operation. The lung injury was detected by hematoxylin-eosin staining, and kidney injury was detected by periodic acid-schiff (PAS) staining. Fluorescence microscopy was used to track the endothelial progenitor cells in vivo. Results: The rats with CLP had down-regulated mean arterial pressure and up-regulated pulse rate, respiratory rate and anal temperature, while in rats with CLP and endothelial progenitor cells transplantation, all of these vital signs were improved. HE staining of lung biopsy showed that there are less inflammatory cells gathering in the endothelial progenitor cells transplanted rats comparing with sepsis rats. PAS staining of kidney biopsy showed that the injury of basement membrane was lightened if the sepsis rats were transplanted endothelial progenitor cells. Further investigation of tracking of endothelial progenitor cells revealed that there were endothelial progenitor cells gathering in the lung and kidney. Conclusions; The transplanted endothelial progenitor cells could quickly shift to the injury organ such as lung and kidney, and protected these organs from further destruction during sepsis.

[KEY WORDS] Endothelial progenitor cell; Sepsis; Cecal ligation-pereferation