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Participation of the mononuclear cells of the cord blood in the physiologic regeneration of the rat kidney

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Abstract

Nowadays ability to use hematopoietic stem cells for treatment of various diseases, including kidney pathology, is widely investigated. Umbilical cord blood as the source of hematopoietic stem cells becomes more and more promising. The purpose of our investigation was to study homing and ways of human umbilical cord blood mononuclear cells differentiation in an intact rat kidney. We transplanted human umbilical cord blood mononuclear cells fraction, enrich with hematopoietic stem cells, into the tail vein of rats. On 2, 5, 7 and 14 days after transplantation paraffin kidney slices were immunohistochemically stained with antibodies against human leukocyte antigen (HLA-ABC) to study migration and differentiation of transplanted cells. Results: HLA-ABC+- cells were revealed in the epithelium of the distal tubule at all experimental dates. But HLA-ABC was expressed not in each distal tubule and not by all tubular cells. We concluded that human umbilical cord blood mononuclear cells transplanted into systemic circulation of rat migrate into the intact kidney and built in the distal tubule epithelium. This data allow to suggest that distal tubule are stem cell «niche» in the kidney.

Keywords

Differentiation, Human umbilical cord blood mononuclear cells, Kidney, Regeneration, Transplantation