Nonbone Marrow-Derived Endothelial Progenitor Cells

What Is Their Exact Location?

To the Editor:

In the March 2, 2007, issue of Circulation Research, Aicher et al demonstrated the incorporation of nonbone marrow-derived tissue resident progenitor cells (TPC) into the vasculature of ischemic tissue using a model of mouse parabiosis with established cross-circulation between 2 individuals.1 Furthermore, they suggested that intestine and liver might serve as sources of TPC. However, the authors did not provide any clues regarding the exact location of the TPC within these organs.

We would like to mention that the concept of nonbone marrow-derived endothelial progenitor cells is not new. In 2001, Alessandri et al demonstrated that the human embryonal aorta contains endothelial progenitor cells which have the capability to differentiate into mature endothelial cells under culture conditions.2 Moreover, in 2005, Ingram and colleagues for the first time presented evidence that endothelial precursor cells reside in the wall of adult blood vessels.3 In line with these data, we showed the existence of endothelial precursor cells in a distinct zone of the vascular wall between the smooth muscle (tunica media) and connective tissue (tunica adventitia) layers, which we called the “vasculogenic zone”.4 Moreover, our study clearly demonstrated that the vascular wall resident endothelial progenitor cells (VW-EPC) are obviously existent in the wall of adult human blood vessels of several organs, among them also the liver.

Although we welcome further efforts to identify and precisely characterize novel sources of EPC, we also find it very important to prevent further confusion in this field. Toward this aim, we propose to perform additional studies to comprehensively investigate the exact origin of the TPC described by Aicher et al and to avoid terms, such as “nonbone marrow”, that lead to unnecessary generalization and make the complex story even more mysterious.

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