Letter to the Editor

Letter Regarding the Article, “A Detailed Analysis of Bone Marrow From Patients With Ischemic Heart Disease and Left Ventricular Dysfunction: BM CD34, CD11b, and Clonogenic Capacity as Biomarkers for Clinical Outcomes”

To the Editor:

With great interest we have read the article by Cogle et al\(^1\) recently published in this journal. The article describes a detailed analysis of bone marrow cells obtained from close to 300 patients enrolled in a triplet of clinical trials investigating bone marrow cells as potential therapy for ischemic heart disease. One of the analyses performed in the study is a colony forming assay for endothelial colony forming cells (ECFCs), a type of endothelial progenitor cells usually obtained from blood and thought to be of consequence for vascular homeostasis and repair.\(^2\)

The procurement of ECFC colonies from bone marrow as described by the authors is somewhat discordant with current reports in literature. Although early studies indicated that bone marrow may be the source of endothelial progenitor cells,\(^3,4\) subsequent reports using mismatched bone marrow transplantation recipients have found no evidence for a bone marrow origin of ECFCs.\(^5,6\) Furthermore, a study by Tura et al\(^7\) that directly compared ECFC cell culture protocols from peripheral and cord blood to bone marrow failed to obtain ECFC colonies from bone marrow. Using a culturing protocol similar to the one used in Cogle et al,\(^1\) Tura et al exclusively obtained mesenchymal stromal cells (MSCs).

We propose therefore that the colonies observed by Cogle et al may not be ECFCs, but rather fibroblast colony–forming units, containing MSCs. Reinterpreting the findings of Cogle et al as pertaining to MSCs rather than ECFCs would lead to interesting conclusions. MSCs are thought to make up the stromal part of the hematopoietic niche\(^8\) and thus harbor CD34\(^+\) hematopoietic stem cells. The authors observe a nadir in the number of CD34\(^+\) cells 7 days post myocardial infarction and a subsequent reduction in the number of plastic adherent colonies at day 14 to 21. This time relation, in conjunction with the close biological and physical interaction between MSCs and CD34\(^+\) cells in the bone marrow, suggest that these 2 events could be linked. It is conceivable that the reduction in colonies represents a compensatory mechanism in niche size, secondary to CD34\(^+\) cell depletion. Alternatively, the 2 events could constitute 2 phases of an (inflammatory) remodeling response in the bone marrow, following myocardial infarction.

If the colonies observed by the authors should indeed prove to be MSCs, their findings would extend beyond therapeutic applications of bone marrow cells or subsets thereof, but would also be of consequence to clinical trials investigating MSCs.\(^2\)

Disclosures

None.

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References

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