EFFECT OF GRANULOCYTE-MACROPHAGE COLONY-STIMULATING FACTOR ON ENDOTHELIAL CELLS

To the Editor:

We read with interest, and unfortunately considerable delay, the report recently published by Yong et al. They examined the effect of granulocyte and granulocyte-macrophage colony-stimulating factor (GM-CSF) on human umbilical vein endothelial cells (HUVEC) and the expression of GM-CSF receptors on this cell type. They found that these CSFs, alone or in combination with other stimuli, did not affect a number of functions of HUVEC, including procoagulant activity, tissue plasminogen activator inhibitor 1, and proliferative activity. They also failed to detect specific GM-CSF binding sites on HUVEC. While we agree that GM-CSF does not affect a number of HUVEC functions related to inflammation and thrombosis, we still maintain that GM-CSF induces proliferation and migration of HUVEC. As a proliferative stimulus, GM-CSF was ½ to ¼ as active as basic fibroblast growth factor (bFGF), used as reference agent, while it induced comparable levels of migration across filters (and unpublished data). Hopefully, we should soon be able to submit to peer review our recent results on this line. At this time we would like to draw the attention of readers to the fact that other laboratories have independently shown effects of GM-CSF on endothelial cells; these publications are not quoted in the report by Yong et al. Inasmuch as none of these reports quotes our original paper, we assume that these are independent observations. We are well aware that the fact that several laboratories have independently observed effects of GM-CSF on vascular endothelium does not necessarily imply that Yong et al are wrong; we have little sympathy for the Latin motto “vox populi, vox Dei.” Yet, on the basis of all available published information, paraphrasing the last sentence of the report by Yong et al, we conservatively suggest that one should not assume that GM-CSF does not affect endothelial cell function.

REFERENCES

5. Fei RG, Penn PE, Wolf NS: A method to establish pure fibroblast and endothelial cell colony cultures from murine bone marrow. Exp Hematol 18:953, 1990

RESPONSE

We note the comments by Drs F. Bussolino and A. Mantovani and are aware that these investigators have reported that granulocyte-macrophage colony-stimulating factor (GM-CSF) stimulates proliferation and migration of human umbilical vein endothelial cells (HUVECs). We are also aware that since our report was accepted for publication, there have been reports from other groups regarding the effects of GM-CSF on endothelial cells. However, we would like to point out that these latter three groups have used nonhuman cells derived from different tissues. Chin et al, for example, used high endothelial venule (HEV) cell cultures derived from rat Peyer’s Patches, while Fei et al isolated endothelial cells from murine bone marrow, and Leszczynski et al used endothelial cells derived from rat heart. Therefore, these studies used very different isolation techniques and culture conditions from those used in our laboratory, and we re-emphasize that the expression of GM-CSF receptors by cultured human endothelial cells, and the ability of these cells to respond to the cytokine, may be critically dependent on culture conditions. Furthermore, as some of these reports do not show statistical data for controls, it is difficult to draw conclusions regarding the relevance of these results to ours.

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Effect of granulocyte-macrophage colony-stimulating factor on endothelial cells [letter; comment]

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