Erythropoietin and Myocardial Infarction

Fabian Sanchis-Gomar, M.D.¹, Vladimir E. Martinez-Bello, Ph.D.¹ and Giuseppe Lippi, M.D.²

To the Editor:

We have read with interest the article by Kanashiro-Takeuchi et al.,¹ in which the authors assessed the effects of recombinant human erythropoietin (rHuEpo) associated with human chorionic gonadotrophin or prolactin administration on postmyocardial infarction improvement. Safety concerns about rHuEpo are unavoidable; the authors noted that complications should be considered during long-term treatment (6 months). Erythrocytosis predisposes to a prothrombotic state, and it has been shown that hematocrit is a prognostic marker in patients with ST-segment elevation MI.² Thus, patients with elevated hematocrit have an increased risk of short-term mortality.² Moreover, arterial thrombi are usually formed under high blood flow conditions.³ Kanashiro-Takeuchi and collaborators showed a sharp short-term increase in hematocrit levels; 21 days after rHuEpo administration, hematocrit values in the treated group increased considerably (from $42.3 \pm 0.9\%$ to $52.6 \pm 1.3\%$). It has been recently shown that a single intravenous dose of rHuEpo administration after percutaneous coronary intervention did not reduce infarct size, was associated with higher rates of adverse cardiovascular events, and significantly increased infarct size among older patients.⁴

Therefore, evidence strongly suggests that erythropoiesis stimulating agents might also carry a cardiovascular risk in the short term.⁵ Contrary to the authors' opinions, short-term clinical events appear in patients that received rHuEpo. In this setting, more data are needed to support erythropoiesis stimulation, increasing hematocrit, and blood viscosity, in patients with high risk of cardiovascular events.

Conflict of Interest

The authors have no conflict of interest.

References

1. Kanashiro-Takeuchi RM, Takeuchi LM, Hatzistergos K, Quevedo H, Selem SM, Treuer AV, Premer C, Balkan W, Margitich I, Song Y, et al. Effects of combination of proliferative agents and erythropoietin on left ventricular remodeling post-myocardial infarction. *Clin Transl Sci*. 2011; 4: 168–174.
2. Greenberg G, Assali A, Vaknin-Assa H, Brosh D, Teplitsky I, Fuchs S, Battler A, Kornowski R, Lev EI. Hematocrit level as a marker of outcome in ST-segment elevation myocardial infarction. *Am J Cardiol*. 2010; 105: 435–440.
3. Lippi G, Franchini M, Targher G. Arterial thrombus formation in cardiovascular disease. *Nat Rev Cardiol*. 2011; 8: 502–512.
4. Najjar SS, Rao SV, Melloni C, Raman SV, Povsic TJ, Melton L, Barsness GW, Prather K, Heitner JF, Kilaru R, et al. Intravenous erythropoietin in patients with ST-segment elevation myocardial infarction: REVEAL: a randomized controlled trial. *JAMA*. 2011; 305: 1863–1872.
5. Bhatt DL. Evaluation of agents to reduce infarct size: it can be quite REVEALing. *JAMA* 2011; 305: 1908–1909.

¹Faculty of Medicine, Department of Physiology, University of Valencia, Valencia, Spain. Fundación Investigación Hospital Clínico Universitario/INCLIVA. Spain; ²Clinical Chemistry and Hematology Laboratory, Department of Pathology and Laboratory Medicine, Academic Hospital of Parma, Parma, Italy.

Correspondence: Fabian Sanchis-Gomar (fabian.sanchis@uv.es)

DOI: 10.1111/j.1752-8062.2011.00360.x