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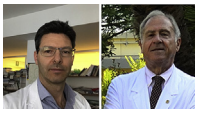

THE THROMBOCYTOPENIA CONUNDRUM AFTER AORTIC BIOPROSTHETIC IMPLANTATION: DO WE REALLY NEED TO SOLVE IT?

To the Editor:

The problem of thrombocytopenia after aortic valve replacement (AVR) with biological prostheses was identified more than 10 years ago. In a series of 20 patients receiving a Freedom Solo stentless pericardial valve (FSSP; LivaNova, Saluggia, Italy), Yekebaran and colleagues[1] first observed a significant reduction of postoperative platelet count without any clinical impact. Subsequently, various studies on this subject confirmed this initial observation. In 2012, we studied this problem, comparing 3 bioprostheses used for AVR: the FSSP and 2 stented valves, Mitroflow pericardial (LivaNova) and Mosaic porcine (Medtronic, Minneapolis, Minn). Our results substantially corroborated those published by others; the reduction in platelet count after AVR appeared to be a transient phenomenon not associated with postoperative mortality or major morbidity. Furthermore, thrombocytopenia occurred irrespective of the bioprosthetic model used, albeit more significantly after AVR with the FSSP.[2]

All subsequent reports on this specific issue have reached the same conclusions, and all speculations on the cause of this phenomenon have remained without a clear-cut answer. Thrombocytopenia has been attributed to numerous factors, including (1) a toxic effect of homocysteic acid, used in the FSSP manufacturing process, possibly superior to that of formaldehyde or glutaraldehyde; (2) patient age, due to a lower production of platelets by the bone marrow of elderly patients (indeed, tissue valves are generally used for AVR mostly in old subjects); (3) mechanical stress due to high transprosthetic gradients in small-sized valves; and (4) the clearly different techniques for valve implantation with stented versus stentless prostheses. These are some of the hypotheses formulated, none of which has been substantiated by consistent clinical results, in particular because most studies have involved small patient series not reaching statistical significance. However, interestingly enough, all the studies published so far agree that thrombocytopenia is not harmful, and that further investigations are needed on larger patient subsets in a prospective, randomized fashion.

In the July issue of the *Journal*, Stegmeier and colleagues[3] have revisited the issue of thrombocytopenia, this time in a study of patients receiving a Perceval S sutureless bioprosthesis (LivaNova). They performed a retrospective analysis (despite previous recommendations) of its incidence in 25 patients with a Perceval S, 23 patients with a Labcor TLPB-A (Labcor, Belo Horizonte, Brazil), and 39 patients with a Hancock II (Medtronic), and found a more severe decrease in platelet count after AVR with the Perceval S compared with other bioprostheses. After more than 10 years, the mystery of thrombocytopenia remains still unsolved, since they also conclude that "in our small study we found no evidence of a detrimental clinical effect of this phenomenon. Future studies have to confirm our findings and investigate a cause for this phenomenon."

So, given that it has been established that thrombocytopenia after AVR with a bioprosthesis is a common but not clinically relevant phenomenon, why should we still be worried? Finally, considering that pericardium is histologically different from a porcine valve leaflet and not created to face the bloodstream, might the pericardium itself be the unintentional villain?

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