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Editorial

Thrombocytopenia after aortic valve procedures – A possible not so harmless finding

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Thrombocytopenia has long been recognized as a likely event following aortic valve replacement (AVR), either with mechanical or biological prosthesis, and its consequences regarded as short-lived, meaningless and fully reversed. However, renewed attention to this association has been drawn by a new generation of prosthetic heart valve devices, where thrombocytopenia findings and related outcomes have been dissimilar than previously reported and adversely affecting postoperative results.

In this issue, a systematic review and a meta-analysis by Jiritano and colleagues brings relevant new data on this association, but also raised more concerns due to the paucity of information at present available. In their study, comparison of peri-procedural thrombocytopenia has been performed on isolated stented valve-AVR, rapid-deployment (RDV), stentless (stentless-AVR), and TAVI (transcatheter aortic valve implantation) [1].

On the surgically implanted prostheses, RDV-AVR group and stentless tissue valves presented higher incidence of post-operative thrombocytopenia compared to stented-AVR group. Conversely, red blood cells transfusion was more frequent in the stented-AVR group, but no difference was found among the groups in terms of need of surgical reexploration for major bleeding. Additional publication reported that severe postoperative thrombocytopenia in these groups was not associated with increased morbidity or mortality [2], being a transient event that reversed over 10 to 15 days without specific treatment.

Though no difference could be identified in this study whether any specific stented valve was at higher risk for perioperative thrombocytopenia and related outcomes, the size of the implanted prosthesis have been implicated in the emergence of this complication [3]. Small-sized prosthesis generates a turbulent flow and higher gradients leading to platelet disruption, thereby encouraging the surgeon to insert a larger-sized as possible prosthesis or with superior hemodynamics.

On the other side, the incidence of thrombocytopenia with TAVI ranged from 25% to 100% and was independently associated to in-hospital mortality ($p = 0.002$). [4] Severe thrombocytopenia after TAVI had been previously reported as a marker of adverse early and late outcome, associated to worse clinical outcomes and identified as an independent risk factor for long-term mortality [5,6].

Persistent postoperative thrombocytopenia after TAVI was described in up to 35% of patients, and mainly in those with pre-procedural thrombocytopenia. A drop in platelet count values >30% after TAVI was associated to higher rates of major and life-threatening bleeding and death at 30-days when compared with a drop≤30% [7].

The balloon-expandable valves were found eliciting a more pronounced post-procedural thrombocytopenia than self-expandable prosthesis. Following this finding, an observational study reported a significant higher cardiac mortality in the balloon-expandable valve cohort compared to self-expandable prosthesis after 5 years of follow-up [8],

Newer procedures seem not immune to this complication. A recent study reported a 100% incidence of thrombocytopenia after valve-in-valve procedures, with 79% of patients exhibiting moderate or severe platelet reduction and the aortic position experiencing the highest and more prolonged platelet drop [9].

A range of hypothesis has been proposed to explain the platelet drop post-TAVI, but the underlying mechanisms for post-TAVI thrombocytopenia and mortality has not been well understood; and believed to be multifactorial. It is apparent that the mechanism involves several components, reflecting device, procedure and patient-related factors.

The work from Jiritano and colleagues has the merit of drawing attention to this novel facet of aortic valve procedures, where thrombocytopenia may not be as harmless as previously thought. However, this field is beset by a paucity of first-class data and should be cautiously interpreted, due to the observational nature of most of these results and with studies limited by small sample sizes. Confirmation of these data in larger cohorts of contemporary patients and well-conducted studies are necessary.

Finally, this exposed correlation may have influence on the current expert consensus guidelines, where a recommendation is

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reinforced for dual antiplatelet therapy with aspirin plus clopidogrel extending for a 3- to 6-month period after TAVI [10].

Declaration of competing interest

The author declares no conflict of interest.

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