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Long-term endovascular treatment of the thoracic aorta: an observational study

Tratamento endovascular da aorta torácica a longo prazo: estudo observacional

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Dear Editor,

We congratulate Brandi et al.[1] for their article "Long-term outcomes after endovascular aortic treatment in patients with thoracic aortic diseases". The study analyzed the long-term results of endovascular treatment in patients with diseases of the thoracic aorta treated with self-expanding stent-grafts. However, we identified certain points that merit discussion.

The heterogeneity of the patients' conditions makes generalization of results and identification of specific patterns in each subset difficult. The high proportion of patients with type B dissection (83.3%) skews the results in the direction of this condition, while less frequent diseases receive less attention. Studies of type B dissection demonstrate that thoracic endovascular aortic repair (TEVAR) improves survival and reduces mortality compared with clinical treatment alone over a 5-year horizon,[2] corroborating the findings of this study.[1] However, the absence of stratification by disease could cause confusion and yield imprecise clinical data.

The lack of a control group limits comparison of the efficacy and safety of endovascular treatment with other approaches. Despite its possible advantages, such as reduced morbidity and early mortality, medium- and long-term outcomes for diseases of the thoracic aorta remain inconclusive.[3] Moreover, treatment success is dependent on an effective initial procedure and patient adherence to regular follow-up,[4] which raises doubts about the long-term benefits, considering the rigorous follow-up needed. Inclusion of comparison groups or use of statistical methods could reduce the selection bias and improve the analysis.

Chronic renal failure was identified as a risk factor for mortality. However, a more robust multivariate analysis could reveal interactions between clinical factors and outcomes, especially with regard to systemic arterial hypertension (SAH) and diabetes mellitus (DM). For example, type 2 DM has been associated with reduced mortality and fewer complications after TEVAR for type B aortic dissection.[5] In turn, SAH can contribute to both aortic and cardiac damage.[6]

Finally, it is very important to extend the analysis of the impact of the heterogeneous nature of the sample and of technological developments on the results. Use of older endovascular devices could have contributed to a higher incidence of complications.

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RESPONSE LETTER

Dear Editor,

All of the questions and doubts raised with respect to this article are pertinent and objective. In fact, some of them were discussed when this work was presented to a cardiology and cardiovascular surgery conference.

As an initial explanation of this study, we employed an observational, prospective study design, conducted in accordance with the clinical study guidelines set out in the STROBE checklist, as described in the study methodology.

With relation to the heterogeneous nature of the aortic diseases included in the study, we did consider the possibility of only using data from patients with aortic dissections, which would have resulted in a "cleaner" article, reducing the number of variables in the clinical results. However, since our basis for comparison was the results of conventional surgery to treat diseases of the descending thoracic aorta (references [4, 12, 15, 17, and 19]) and the surgical procedure adopted for these diseases is basically the same (the elephant trunk), we decided to include all of the patients.

The variability of aortic diseases was also mentioned in the article limitations: "*Nevertheless, it analyzes a dataset from a large series of endovascular treatments in patients with thoracic aortic diseases and it was appropriate to include these patients together to make it possible to extract results and conclusions from this* ***heterogeneous patient population***. *In addition, the results reflect outcomes from a real institutional setting, showing the evolution of cases over 132 months of follow-up*".

As mentioned above, when comparing data, in lieu of controls, we used published data on open surgery to treat the descending aorta. Primary success of endoprosthesis implantation and also the rates of complications and hospital mortality were also compared with specific articles. The best results were observed up to 60 months of follow-up.

We strive to ensure rigorous outpatients follow-up in both the immediate and late postoperative periods, with control tomography scans scheduled in advance, in line with a pre-established protocol. Some of the return consultations and imaging examinations were missed, despite proactively seeking patients via telephone contact. However, the major problem linked to later complications was failure to control systemic arterial pressure.

Among risk factors for mortality, we did not distinguish between diabetes types 1 and 2. However, chronic renal failure, and its harmful effects on the entire cardiovascular system, was the number one factor associated with postoperative mortality.

There is no doubt that the progressive development of endoprostheses contributed significantly to improving the results. When we started using surgery to correct diseases of the thoracic descending aorta (thoracic aortic endovascular repair, TEVAR) in 1998, the only endoprostheses we had available were stainless steel devices made by Braile-Biomédica. Over the years, both manufacturers and medical teams followed a learning curve. In 2004-2005, nitinol endoprostheses were launched by Braile-Biomédica, which yielded technical improvements and better clinical results.

In the study discussed here, 7 of the 9 patients who had type I endoleaks over the course of medical follow-up had been fitted with stainless steel devices. In 2013, our hospital authorized the use of imported endoprostheses, enabling us to treat more complex lesions, with improved comfort and better results. Now, we are close to reaching a total of 600 patients who have undergone endovascular surgery of the thoracic aorta.

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