Editorial

Treatment of uncomplicated acute type B aortic dissection in the endovascular era: is it time for a paradigm shift?

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Qin *et al*. (1) reported a multi-institutional retrospective study involving three hospitals that analyzed and compared the effects of thoracic endovascular aortic repair (TEVAR) combined with best medical treatment (BMT) versus BMT alone for treating uncomplicated acute type B aortic dissection (TBAD). The controversy regarding the actual efficacy and benefits of TEVAR in uncomplicated acute TBAD is partly attributable to study reports based on analysis over a heterogeneous population of both complicated and uncomplicated TBAD patients (2). To address this issue, Qin *et al*. selectively included patients diagnosed with uncomplicated acute TBAD only. The results clearly showed a greater benefit of adding TEVAR to BMT over BMT alone. Currently, TEVAR is a class II recommendation for treating uncomplicated acute TBAD, while BMT remains a class I recommendation (3,4). The lower class of recommendation for TEVAR is mostly attributable to the lack of robust data to support its routine application. Currently, BMT appears to demonstrate relatively enhanced short-term outcomes. However, the early benefits do not seem to be sustained over time, as evidenced by the time-dependent occurrence of aneurysmal degeneration and rupture or disease progression. Up to 40% of patients reportedly undergo surgery after BMT, resulting in a relatively low overall 6-year intervention-free survival rate approximating 41% (5-7). Furthermore, the reported 3-, 5-, and 6-year mortality rates are also suboptimal at 22.4%, 27.9%, and 42%, respectively (7-9). In contrast to uncomplicated TBAD, TEVAR is a class I recommendation for complicated acute TBAD (3,4). Considering the relatively poor long-term outcomes of BMT alone and the encouraging results observed with TEVAR for complicated acute TBAD, it seems reasonable to expect improved outcomes with TEVAR added to BMT for this condition. The ADSORB trial was the only prospective, randomized clinical trial aimed at collecting level A evidence for treating uncomplicated acute TBAD with TEVAR (10). Although the 1-year analysis was too short to address some of the more long-term issues, and the relatively small cohort size was limiting for an adequate statistical power of analysis, the procedural safety and significantly enhanced outcomes in terms of greater, albeit incomplete, false lumen (FL) thrombosis, decrease in FL size, and increase in true lumen (TL) size supported adding TEVAR to BMT (10). Similar to the ADSORB trial, Qin *et al*. (1) conducted a multi-institutional but a retrospective study. Despite its limitations, the study involved a larger cohort of 338 patients in which 184 received TEVAR plus BMT and 154 received BMT alone. Furthermore, the follow-up duration was significantly longer at 11 years. Therefore, the major strengths of this study were in the greater statistical power of analysis and the ability to provide valuable information regarding the primary endpoints over a significantly longer period of time. In this study, BMT plus TEVAR showed significantly fewer overall all-cause aorta-related deaths and aorta-related

adverse events compared to BMT alone. Although the early event rates in the TEVAR plus BMT group tended to be significantly higher, the events were mostly relatively minor; in the BMT alone group, there was a tendency for a lower event rate, but the incidence of more serious complications was greater; there were 3 aortic ruptures in the BMT alone group while no such complications occurred in the TEVAR plus BMT group. Subsequently, the 30-day mortality in the BMT group was higher at 4 deaths while in the TEVAR plus BMT group, there was only 1 death. Beyond the 30-day period, the TEVAR plus BMT group showed greater sustained benefit over BMT with respect to aorta-related events and mortality rates, both of which were significantly lower. The INSTEAD trial studied the therapeutic implications of adding TEVAR to BMT in a patient population of chronic, uncomplicated TBAD. However, the cohort chronicity was actually closer to that of a subacute patient population, as the dissection in most of the enrolled patients occurred within 2 months (11). From this perspective, the two cohorts were relatively similar in chronicity, and thus the results of the INSTEAD XL study (12), an extended analysis of the 5-year outcomes of the original INSTEAD cohort may be interpreted as being supportive of treating uncomplicated acute TBAD with TEVAR. Stent graft-induced new entry, despite its rare occurrence, remains a major concern (1). As this potentially fatal complication may occur unpredictably, patients should be carefully monitored after TEVAR for this reason alone. Retrograde type A aortic dissection is also a rare but potentially fatal complication that may occur unpredictably after TEVAR during follow-up. Despite these risks, the lower overall mortality in the TEVAR plus BMT group compared with the BMT alone group supports the view that early prophylactic institution of TEVAR may be beneficial for uncomplicated acute TBAD. Contrary to prevailing beliefs, the present study showed that TEVAR did not pose an unacceptably high risk of serious complications that otherwise would not have occurred, and early institution of TEVAR resulted in fewer major adverse events with the sustained therapeutic benefits over time. Efforts are underway to expand the application of TEVAR to treating uncomplicated acute TBAD. The study by Qin *et al.* (1) is an important contribution to this effort, and adds valuable information to this rapidly expanding field.

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Footnote

Conflicts of Interest: The author has no conflicts of interest to declare.

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