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COMMENTARY

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TAVR and stroke: A common evolution

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Transcatheter aortic-valve replacement (TAVR) has become the treatment of choice for the majority of symptomatic patients affected by severe aortic stenosis (AS).[1] The most recent European guidelines recommend the use of TAVR in patients older than 75 years or characterized by intermediate/high surgical risk.[1] These recommendations are the result of several randomized clinical trials (RCTs) which demonstrated a higher efficacy and safety of TAVR over standard surgical aortic valve replacement (SAVR) among patients at ever-decreasing surgical risk and age.[1] Despite this promising evidence, cerebrovascular events (CVE) remain a fearsome, deadly, and not infrequent complications of TAVR procedure, with an incidence ranging from 1% to 5% of all TAVR-patients. Of note, thanks to technological improvements, increased operator experience and decreasing patient risk profile, the rates of peri-procedural stroke have been slowly dropping over the last few years (from 6.7% to 4.9%, respectively with balloon- and self-expandable devices in high-risk patients to 0.6% and 3.4% in last trials with low-risk patients).[1]

In this issue of CCI, Eschenbach et al. presented data of a single-center, retrospective, 10-year registry.[2] Among 1919 patients treated with TAVR (mean age 80 years; mean STS score 5.23%), they reported 76 CVE (3.9%) within 30 days (1.9% considered disabling and 1.6% nondisabling), mostly left-sided (45%). CVE rate was higher during the initial implantation phase and declined thereafter. As expected, patients with stroke showed a significantly higher 30-day mortality. At multivariate analysis, both previous history of CVE and low operator experience were independently related to the occurrence of peri-procedural stroke, while age and surgical risk were not.

This is an interesting analysis reflecting a real-world experience and including a heterogeneous population that is far different from the "ideal ones" usually recruited in RCTs. Looking at the present results, and comparing them with the available evidence in the literature, one thing clearly appears: stroke rates remain below 4%, but data on predictors of peri-procedural CVE occurrence is generally controversial and inconsistent.

Indeed, as highlighted by the authors, the results of the present study are substantially different from others previously published. For example, both age and surgical risk, which seemed not to affect stroke incidence in the present analysis, have been previously identified as strong independent predictors of CVE.[2–4] Differently from the current paper (mean STS score 5.23%), when the surgical risk is below 4%, the stroke rate was 0.63 times lower after TAVR rather than SAVR, as demonstrated by a recent pooled analysis.[4] Moreover, self-expandable valves, which here presented a trend towards significance in increasing periprocedural CVE occurrence, have not always been associated with increased stroke incidence after TAVR.[5] Finally, both recent improvements in device technology and increasing operator experience over time have been associated with lower peri-procedural stroke rates in most but not all studies.[2,3] This may be related to the different implantation techniques adopted (eg. use of a periprocedural balloon, device repositioning, etc.) as well as clinical differences among the studied populations (e.g., carotid disease, atrial fibrillation, etc.).

Trying to summarize the so far available data we could state that: (1) periprocedural stroke is an infrequent (but not rare) TAVR complication; (2) its incidence seems to be slowly decreasing thanks to technological improvements, higher operator experience, and, mostly, the lower surgical risk of patients undergoing TAVR; (3) CVE predictors are not well defined yet and possibly include several anatomical and clinical patient characteristics, and (4) the incidence of peri-procedural stroke seems to be lower in patients treated with TAVR rather than SAVR, especially among those patients with low-surgical risk.

Though characterized by some strengths (up to 10 different TAVR devices implanted, the large number of patients included, and the nonselected population) the present study may have been limited by its single-center retrospective nature and the small number of events observed. Moreover, one of the major limitations of the analysis is the absence of data regarding peri- and postprocedural antithrombotic therapy, which may have potentially influenced the early incidence of stroke after the procedure. However, the consistently low incidence of periprocedural stroke among patients undergoing TAVR (and across different patient risk profiles) is encouraging. In the era of debate about patient selection and TAVR/SAVR ideal candidate identification, the stroke risk is not variable conditioning the choice of one treatment versus another. On the contrary, the lower incidence of CVE after TAVR compared to SAVR in RCTs including younger and lower-risk patients, suggests a possible selective periprocedural advantage of TAVR as related to the stroke rate.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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