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How to Use Risk Score Systems on Severe Aortic Stenosis?

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Abstract

Aorticstenosis is the most common acquired valvar disease, when severe and symptomatic, surgical approach wasthegold standard therapy. It is Worth noticing that severe aortic stenosis treatment was change in the last years and transcatheter aortic-valve replacement (TAVR) become an important therapy for a specific group of patients with a severe aortic stenosis. The patients schedule for TAVR has been progressively changing from only high risk to intermediary risk patients. After these patients selections a world wide risk models were emerged to stratifie patients before TAVR. The STS score was the most used risk score to refer patients for TAVR.

Keywords: Aortic stenosis; Trans catheter aortic-valve replacement; STS score; Valvar disease

Introduction

Aortic stenosis is the most common acquired valvar disease, when severe and symptomatic, surgical approach was the gold standard therapy. It is Worth noticing that severe aortic stenosis treatment was change in the last years and trans catheter aortic-valve replacement (TAVR) become an important therapy for a specific group of patients with a severe aortic stenosis.

In this setting risk scoring play a important role, identifying patient with high risk whom could benefit from a percutaneous approach. Risk scoring systems have been developed to predict mortality after cardiac surgery in adults Preoperative risks tratification is essential to making sound surgical decisions.

Risk Scores Models

Curiously, specific scores for mortality prediction in TAVR are recente publish. TAVR specific clinical prediction models are France TAVR registry (FRANCE-2 model) [1], the Italian TAVI registry (OBSERVANT model) [2] and the Society of Thoracic Surgeons/American College of Cardiology Transcatheter Valve Therapy registry (ACC model) [3].

The mostused score isthe STS score. This was generated from the U.S. database separated into three large cohorts with more than 100,000 patients each. In groups 2 and 3, only valve surgeries (aortic valve replacement, mitral valve replacement and mitral valve repair), combined valve surgery and coronary artery bypass grafting (CABG) were respectively included. The performance of the STS model are poor at predicting 30-day mortality post TAVR [4]

These scores were tested prospectively on every TAVR procedure in the United Kingdom from January 2007 to December 2014. A total of 7431 was assessed and all scores were analized in terms of calibration and discrimination. Calibration is the comparing between the expected and observed event rates (discrimination is the ability to distinguish between those who will experience an event and those who willnot. Discrimination of the risk models wasa nalyzed using the area under the receiver operating characteristic (ROC) curve.

The ACC and STS models were the closest to the observed mortality in terms of absolute and relative diferences [5]. The area underthe ROC curve was below 0.7 for all models, with the majority close to 0.6; the ACC and FRANCE-2 had the highest discrimination [5].

High Risk Aortic Stenosis Patients

First TAVR approval was made for patients were not candidates for surgeryorat high risk for complications due to surgery. These recomendation derived from two cohort of trial Partner: the high risk cohort included 699 patients with severe aortic stenosis and cardiac symptoms at 22 centers the median of STS score was 11.8% and the TAVR was non inferior

when comparing with cardiac surgery [6]. At 1 year, the rate of death from any cause in the intention-to-treat population (the primary study end point) was 24.2% in the transcatheter group as comparedwith 26.8% in the surgical patients [6].

In the cohort of patients who cannot undergo surgery, 358 were included at 21 centers, with median STS score, 11.6±6.0%. There were many patients with low STS scores, but with coexisting conditions that contributed to the surgeons determination that the patient was not a suitable candidate for surgery, including: an extensively calcified (porcelain) aorta (15.1%), chest wall.

Deformity or deleterious effects of chest-wall irradiation (13.1%), oxygen-dependent respiratory insufficiency (23.5%), and frailty. At the 1-year follow-up, the rate of death from any cause (the primary end point), as calculated with the use of a Kaplan-Meier analysis, was 30.7% in the TAVI group, as compared with 50.7% in the standard-therapy group without surgery [7].

Intermediate-Risk Patients with Severe Aortic Stenosis

Recently, the PARTNER 2 tria lshowed results of 2032 intermediate-risk patients with severe aortic stenosis, at 57 centers, to undergo either TAVR or surgical replacement. The intermediate-riskpatients, TAVR was similar to surgical aortic-valve replacement with respect to the primary end point of death or disabling stroke. The mediam of STS score was 5.8%, 6.7% of the patients had an STS score that was lessthan 4.0%, 81.3% had a score that was between 4.0% and 8.0%, and 12.0% had a score that was greater than 8.0% [8].

Another study recently published from the SURTAVI investigators included a total of 1746 patients underwent randomization at 87 centers. The mean age of the patients was 79.8 years, and all were at intermediate risk for surgery with mean of STS score 4.5±1.6%. In this trial surgery was associated with higher rates of acute kidney injury, atrial fibrillation, and transfusion requirements, whereas TAVR had higher rates of residual aortic regurgitation and need for pacemaker implantation. The investigators concluded that TAVR was non inferior when comparing with cardicsurgery [9].

Conclusion

Probably in the next years all patients with aortic stenosis will be always schedule for TAVR. The risk score models will be used to give more information for the patients about the morbidities and mortality risks. The best score toused in your institution will be validated with local reality.

References

1. Iung B, Laouénan C, Himbert D, Eltchaninoff H, Chevreul K, et al. (2014) Predictive factors of early mortality after transcatheter aortic valve implantation: individual risk assessment using a simple score. Heart 100(13): 1016-1023.
2. Capodanno D, Barbanti M, Tamburino C, D'Errigo P, Ranucci M, et al. (2014) A simplerisk tool (the OBSERVANT score) for prediction of 30-day mortality after transcatheter aortic valve replacement. Am J Cardiol 113(11): 1851-1858.
3. Edwards FH, Cohen DJ, O'Brien SM, Peterson ED, Mack MJ, et al. (2016) Development and validation of a risk prediction model for in-hospital mortality after transcatheter aortic valve replacement. JAMA Cardiol 1(1): 46-52.
4. Durand E, Borz B, Godin M, Tron C, Litzler PY, et al. (2013) Performance analysis of EuroSCORE II compared to the original logistic EuroSCORE and STS scores for predicting 30-day mortality after transcatheter aortic valve replacement. Am J Cardiol 111(6): 891-897.
5. Martin GP, Sperrin M, Ludman PF, de Belder MA, Gale CP, et al. (2017) Inadequacy of existing clinical prediction models for predicting mortality after transcatheter aortic valve implantation. Am Heart 184: 97-105.
6. Smith CR, Leon MB, Mack MJ, Miller DC, Moses JW, et al. (2011) Transcatheter versus surgical aortic-valve replacement in high-riskpatients. N Engl J Med 364(23): 2187-2198.
7. Leon MB, Smith CR, Mack M, Miller DC, Moses JW, et al. (2010) Transcatheter aortic-valve implantation for aortic stenosis in patients who cannot undergo surgery. N Engl J Med 363(17): 1597-1607.
8. Leon MB, Smith CR, Mack MJ, Makkar RR, Svensson LG, et al. (2016) Transcatheter or surgical aortic-valvereplacement in intermediate-riskpatients. N Engl J Med 374(17): 1609-1620.
9. Reardon MJ, Van Mieghem NM, Popma JJ, Kleiman NS, Søndergaard L, et al. (2017) Surgical or Transcatheter Aortic-Valve Replacement in Intermediate-Risk Patients. N Engl J Med 376(14): 1321-1331.

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