JACC: Cardiovascular Interventions

Volume 10, Issue 15, 14 August 2017, Pages 1564-1574

Structural: Aortic Valve Focus

Clinical Impact of Baseline Right Bundle Branch Block in Patients Undergoing Transcatheter Aortic Valve Replacement

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Received 13 March 2017, Revised 1 May 2017, Accepted 5 May 2017, Available online 19 July 2017.

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https://doi.org/10.1016/j.jcin.2017.05.030

Referred to by Ron Waksman, Arie Steinvil
Pre-Transcatheter Aortic Valve Replacement Right Bundle Branch Block
JACC: Cardiovascular Interventions, Volume 10, Issue 15, 14 August 2017, Pages 1575-1577

PDF (127KB)

Abstract

Objectives

This study sought to assess the influence of baseline right bundle branch block (RBBB) on all-cause and cardiovascular mortality as well as sudden cardiac death (SCD) among patients undergoing transcatheter aortic valve replacement (TAVR).

Background

Few data exist regarding the late clinical impact of pre-existing RBBB in TAVR recipients.

Methods

A total of 3,527 patients (mean age 82 ± 8 years, 50.1% men) were evaluated according to the presence of RBBB on baseline electrocardiography. Intraventricular conduction abnormalities were classified according to the American Heart Association, American College of Cardiology Foundation, and Heart Rhythm Society recommendations for standardization and interpretation of the electrocardiogram. TAVR complications and causes of death were defined according to Valve Academic Research Consortium 2 definitions.

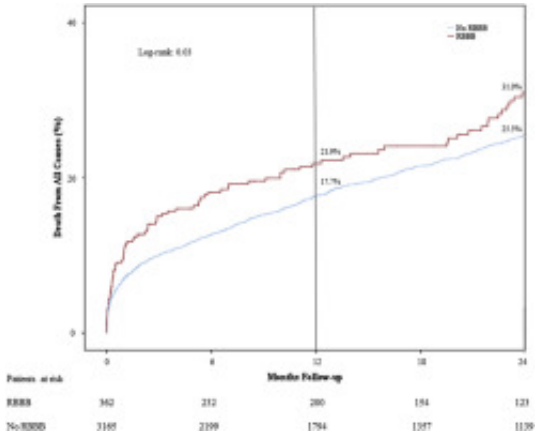
Results

RBBB was present on baseline electrocardiography in 362 patients (10.3%) and associated with higher 30-day rates of permanent pacemaker implantation (PPI) (40.1% vs. 13.5%; $p < 0.001$) and death (10.2% vs. 6.9%; $p = 0.024$). At a mean follow-up of 20 ± 18 months, pre-existing RBBB was independently associated with all-cause mortality (hazard ratio [HR]: 1.31; 95% confidence interval [CI]: 1.06 to 1.63; $p = 0.014$) and cardiovascular mortality (HR: 1.45; 95% CI: 1.11 to 1.89; $p = 0.006$) but not with SCD (HR: 0.71; 95% CI: 0.22 to 2.32; $p = 0.57$). Patients with pre-existing RBBB and without PPI at discharge from the index hospitalization had the highest 2-year risk for cardiovascular death (27.8%; 95% CI: 20.9% to 36.1%; log-rank $p = 0.007$). In a subanalysis of 1,245 patients without PPI at discharge from the index hospitalization and with complete follow-up regarding the need for PPI, pre-existing RBBB was independently associated with the composite of SCD and PPI (HR: 2.68; 95% CI: 1.16 to 6.17; $p = 0.023$).

Conclusions

Pre-existing RBBB was found in 10% of TAVR recipients and was associated with poorer clinical outcomes. Patients with baseline RBBB without permanent pacemakers at hospital discharge may be at especially high risk for high-degree atrioventricular block and/or SCD during follow-up. Future studies should evaluate strategies aimed at the early detection of patients at risk for late development of high-degree atrioventricular block.

Graphical abstract



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Key Words

outcomespermanent pacemaker implantationright bundle branch blocksudden cardiac deathtranscatheter aortic valve replacement

Abbreviations and Acronyms

AVBatrioventricular blockCIconfidence intervalHRhazard ratioLBBBleft bundle branch blockPPIpermanent pacemaker implantationRBBBright bundle branch blockSCDsudden cardiac deathTAVRtranscatheter aortic valve replacementVARCValve Academic Research Consortium

received research grants from Edwards Lifesciences and Medtronic. Dr. Auffret has received fellowship support from Fédération Française de Cardiologie and research grants from Abbott, Edwards Lifesciences, Medtronic, Biosensors, Terumo, and Boston Scientific. Drs. Webb, Eltchaninoff, and Dumont are consultants for Edwards Lifesciences. Dr. Tamburino is a consultant for Edwards Lifesciences, Medtronic, CeloNova, and Abbott. Dr. Nietlispach has served as a consultant for Edwards Lifesciences, Medtronic, and St. Jude Medical; and has received speaking fees from Jude Medical and Biotronik. Dr. Moris has served as a proctor and an adviser for Medtronic. Dr. Ruel has served as a proctor for Medtronic; and has received a research grant from Edwards Lifesciences. Dr. de Brito has served as a proctor for Edwards Lifesciences and Medtronic. Dr. Sarmento-Leite has served as a proctor for Medtronic CoreValve implantation. Dr. Himbert is a consultant for Edwards Lifesciences; and has served as a proctor for Edwards Lifesciences and Medtronic. Dr. Vahanian has received speaking fees from Edwards Lifesciences and Abbott; and has served on the advisory board of Valtech. Dr. Maisano has served as a consultant to Abbott Vascular, Medtronic, St. Jude Medical, and Valtech Cardio; has received royalties from Edwards Lifesciences; and is a cofounder of 4Tech. Dr. Rodés-Cabau holds the Canadian Research Chair “Fondation Famille Jacques Larivière” for the Development of Structural Heart Disease Interventions. All other authors have reported that they have no relationships relevant to the contents of this paper to disclose.