

Propensity score-matched analysis of patients with severe aortic stenosis undergoing surgical aortic valve replacement

Shiro Miura, Takehiro Yamashita, Michiya Hanyu, Hiraku Kumamaru, Shinichi Shirai, Kenji Ando

論文紹介

- 近年日本でも、心臓弁膜症、特に**大動脈弁狭窄症**の患者さんは高齢者を中心に年々増加の一途です。
- 大動脈弁狭窄症**とは経時的に大動脈弁の開放が制限されて狭くなった状態を指し、進行しますと息切れ、狭心痛や失神などの症状を呈し、**外科的弁置換術**を必要とする場合があります。
- 当院では、重症大動脈弁狭窄症に対する数多くの外科的弁置換術のみならず、近年開発されました最新の治療であります（胸を開けない）**経カテーテルによる大動脈弁留置術**も導入され、良好な成績を取っています。
- 本論文は、重症大動脈弁狭窄症の患者様の予後データに特殊な統計解析方法を用いまして、外科的弁置換術の有用性や手術リスクを検討し、**どのような患者様が特に弁置換術の恩恵にあずかれるか**を研究したものです。

論文

Open access Valvular heart disease

openheart Propensity score-matched analysis of patients with severe aortic stenosis undergoing surgical aortic valve replacement

Shiro Miura,¹ Takehiro Yamashita,¹ Michiya Hanyu,² Hiraku Kumamaru,³ Shinichi Shirai,⁴ Kenji Ando⁴

ABSTRACT Severe aortic stenosis (AS) is one of the most serious valve conditions. Patient demography and the aetiology of AS have substantially changed in the past several decades along with a drastic improvement of surgical aortic valve replacement (SAVR) and its associated procedures. Contemporary patients with severe AS have multiple comorbidities and live much longer. We aimed to elucidate the treatment effects of SAVR on long-term outcome in propensity score (PS)-matched and the entire patient populations.

Methods We retrospectively reviewed 570 patients with severe AS defined as an aortic valve area of 1.0 cm² or less. Systemic differences in 39 baseline characteristics between non-SAVR and SAVR groups were adjusted using PS matching method. The endpoints included all-cause mortality and cardiovascular events that included heart failure, non-fatal stroke, syncope and acute coronary syndrome.

Results Overall, 55% of the entire population (mean age 78 years, males 41%) were symptomatic. During 3.9 years of the median follow-up, 210 (36%) patients underwent SAVR and 231 (41%) died. Cumulative incidences of mortality and both mortality and cardiovascular events were significantly higher in the non-SAVR group than in the other group ($p < 0.001$, each). Among 101 PS-matched pairs, SAVR correlated with a lower mortality risk (HR 0.35; 95% CI 0.21 to 0.59; $p < 0.001$) and mortality and cardiovascular events combined (HR 0.62; 95% CI 0.42 to 0.92; $p = 0.02$). However, survival difference between both groups was markedly smaller among asymptomatic patients in the subgroup of matched patients.

Conclusion Patients with AS undergoing SAVR exhibit a lower incidence of all-cause mortality and major cardiovascular events than those not undergoing surgical interventions, even after the baseline characteristics are balanced by the PS matching. The correlation between SAVR and survival from cardiovascular events is less evident among asymptomatic patients.

INTRODUCTION The prevalence of aortic stenosis (AS) increases with ageing, and AS is one of the leading valve abnormalities. Recently,

Key questions

What is already known about this subject?
 ▶ Among patients with severe symptomatic aortic stenosis (AS), surgical aortic valve replacement (SAVR) has been demonstrated to improve survival compared with that in unoperated patients. However, a substantial imbalance in terms of baseline characteristics, for example, comorbidities, cardiovascular risks, valve severity, performance status (frailty) and socioeconomic background, can exist between operated and unoperated patients.

What does this study add?
 ▶ In this contemporary study, patients undergoing SAVR exhibited a lower incidence of death and major cardiovascular events than medically treated patients, even after baseline characteristics were balanced via propensity score matching. However, further studies are warranted to appropriately debate the appropriate indications, methods and timing of surgical intervention for asymptomatic patients or for those with renal dysfunction.

How might this impact on clinical practice?
 ▶ These findings can have substantial implications for informed decision-making during the management of patients with severe AS among heart team members and those seeking advice on prognosis of the critical disease. Our data are also more valuable in terms of the efficacy of surgical interventions on long-term clinical outcomes over medical management in the new era of transcatheter aortic valve replacement.

degenerative AS, the most prevalent aetiology, has rapidly increased, with a prevalence of 2%–7% in the population aged 265 years.^{1,2} In the past several decades, patients' profiles have shifted remarkably, with the aetiology now dominated by senile calcific AS.³ Moreover, patients are more likely to comprise marked comorbidities, such as multiple organ dysfunctions and concomitant cardiovascular diseases, all independently affecting

Received 12 December 2018
 Revised 22 March 2019
 Accepted 26 April 2019

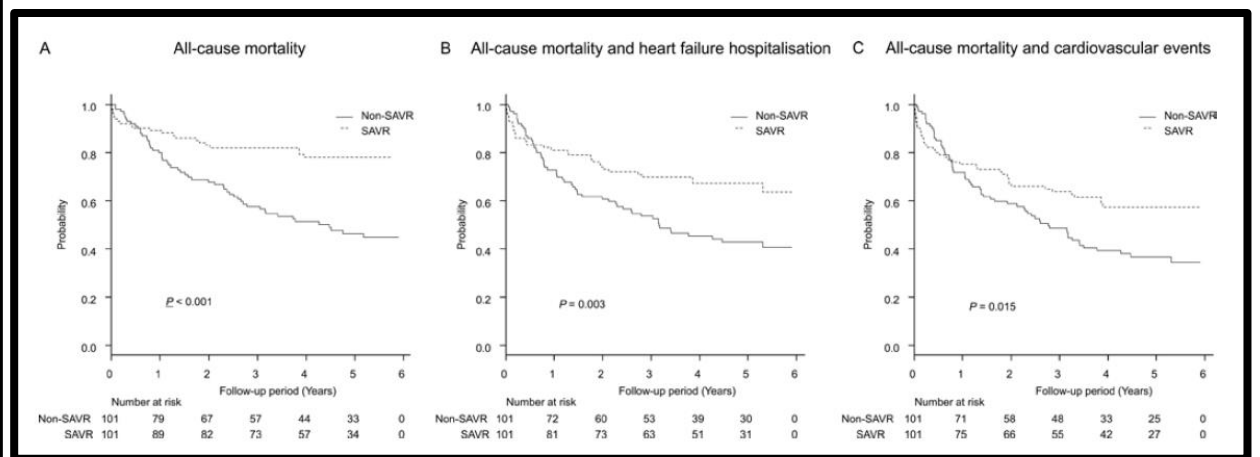
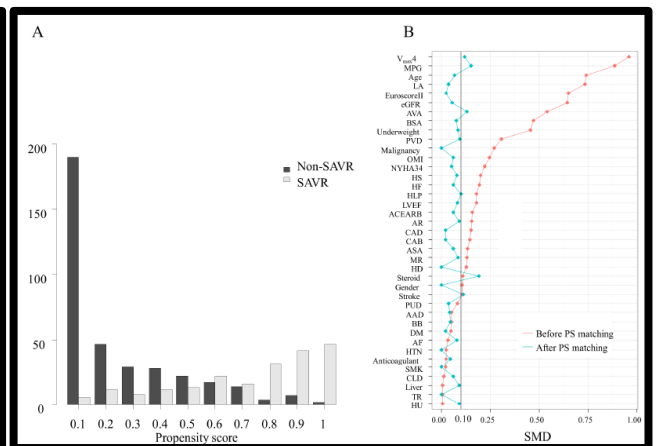
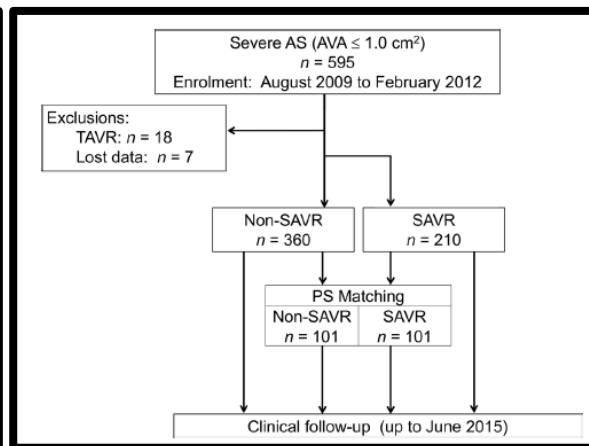
Check for updates

© Author(s) (or their employer(s)) 2019. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

¹Department of Cardiology, Hokkaido Ono Memorial Hospital, Sapporo, Japan
²Cardiovascular Centre, Tanke Kokusai Foundation Medical Research Institute, Kitano Hospital, Osaka, Japan
³Graduate School of Medicine, The University of Tokyo, Tokyo, Japan
⁴Department of Cardiology, Kokura Memorial Hospital, Kitakyushu, Japan

Correspondence to: Dr Shiro Miura, shirontan1027@yahoo.co.jp

Miura S, et al. *Open Heart* 2019;6:e000992. doi:10.1136/openheart-2018-000992



医師紹介



三浦 史郎 医師
(みうら しろう)

【現職】

社会医療法人孝仁会
北海道大野記念病院 医長

【経歴】

九州大学医学部医学科
 沖縄県立中部病院 初期後期研修
 社会保険小倉記念病院循環器科勤務
 英国サウザンプトン大学大学院
 (修士号: 医療統計学)

【専門医等】

日本内科学会総合内科専門医
 日本循環器学会専門医
 日本心血管インターベンション治療学会CVIT 認定医
 SHD心エコー認定医
 Japanese Board of Perioperative
 Transesophageal Echocardiography (JB-POT) 認定医
 浅大腿動脈ステントグラフト実施医
 植込み型除細動器 (ICD)
 ペーシングによる心不全治療 (CRT) 研修修了