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Case report

Severe asymptomatic aortic stenosis and silent coronary disease: a case report

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Abstract We present an asymptomatic patients with bicuspid aortic stenosis referred for echocardiographical assessment of severity and stress testing and to evaluate future therapeutic approach.

Keywords asymptomatic aortic stenosis, bicuspid valve, stress testing

Introduction

Aortic stenosis (AS) is the most common heart valve disease in developed countries[1,2]. While in patients with symptomatic AS aortic valve replacement (AVR) is indicated and is the only life-saving procedure[1,2,3], there is no consensus on whether or how to treat asymptomatic patients with hemodinamically significant AS. Especially might be difficult decision in patients with severe AS and bicuspid aortic valve as these patients are typically younger and often with present concomitant aortic disease[4].

There is also no data on the prevalence of silent/latent coronary artery disease (CAD) in asymptomatic patients with severe AS, although concomitant CAD influence the choice and the timing of AVR in these patients. Exercise testing has a role to evaluate symptomatic status, but also for risk stratification[1,2]. Yet, exercise testing are underperformed in these patients in everyday clinical practice, maybe due to the unfounded risk of potential adverse event during testing.

Here we show a case of a asymptomatic patient with bicuspid aortic valve and AS who has been referred to our hospital to evaluate the severity of AS and the status of the patient, as well as to determine further therapeutic approach.

Case report

A 46 year old male, moderately physically active, has been referred to our hospital to evaluate the severity of AS and his objective status, as well as to determine further therapeutic approach. Echocardiographic exam from right parasternal view and short axis left parasternal view revealed severe AS (figure 1 and 2) and the existence of bicuspid aortic valve. Left ventricular ejection fraction (LVEF) was normal (77.6%) and LV dimensions were within normal range. There were no signs of pulmonary hypertension either.

In order to evaluate his symptomatic status we have performed stress-echo testing on semi-supine ergobicycle and according to Ramp 15 protocol. An adequate test was performed, a 137 watts load and 92% of maximal predicted heart rate was achieved, while patient remained asymptomatic. No EKG or echo (during or post-exercise) signs of ischemia were detected, nor segmental wall motion abnormalities.

So, after testing it was obvious that we have an asymptomatic patient with severe AS. Now the question was do we send this patient to AVR or we opt for a "watchful waiting" strategy? As patient was relatively young with low STS score (1.321), in concordance with existing ACC/AHA valvular guidelines, as well as in line with patient' wishes, we recommended AVR. However, preoperative coronary angiography surprised us, and demonstrated significant two-vessel coronary artery disease (RCA and Cx, figures 3 and 4). Finally, patient was scheduled for concomitant coronary by-pass surgery and AVR.

Discussion

Our decision/recommendation to refer patient for AVR, although patients was asymptomatic, was in line with the latest ACC/AHA valvular guidelines from 2017[2,3]. Comparing to 2014 version, an indication for AVR in asymptomatic patients with severe AS (group C in guidelines) was upgraded from IIB to I (level of evidence C)[3]. In that sense, this recommendation is not related to the origin of AS (whether it is degenerative AS, rheumatic or bicuspid AS). This change in recommendation in ACC/AHA 2017 guidelines is based on several retrospective studies and registries[5-6] which showed that elective AVR is better than AVR after the symptom onset. The fact that the prognosis of AS patients becomes significantly worse ones AS related symptoms are present; mean survival is 2 years[7]. In addition, the recommended time between symptom onset and AVR is within 3 months, which is difficult to implement in most of the countries due to the long waiting lists. And If AVR is being considered in AS patients with bicuspid valve, at this point the adequate

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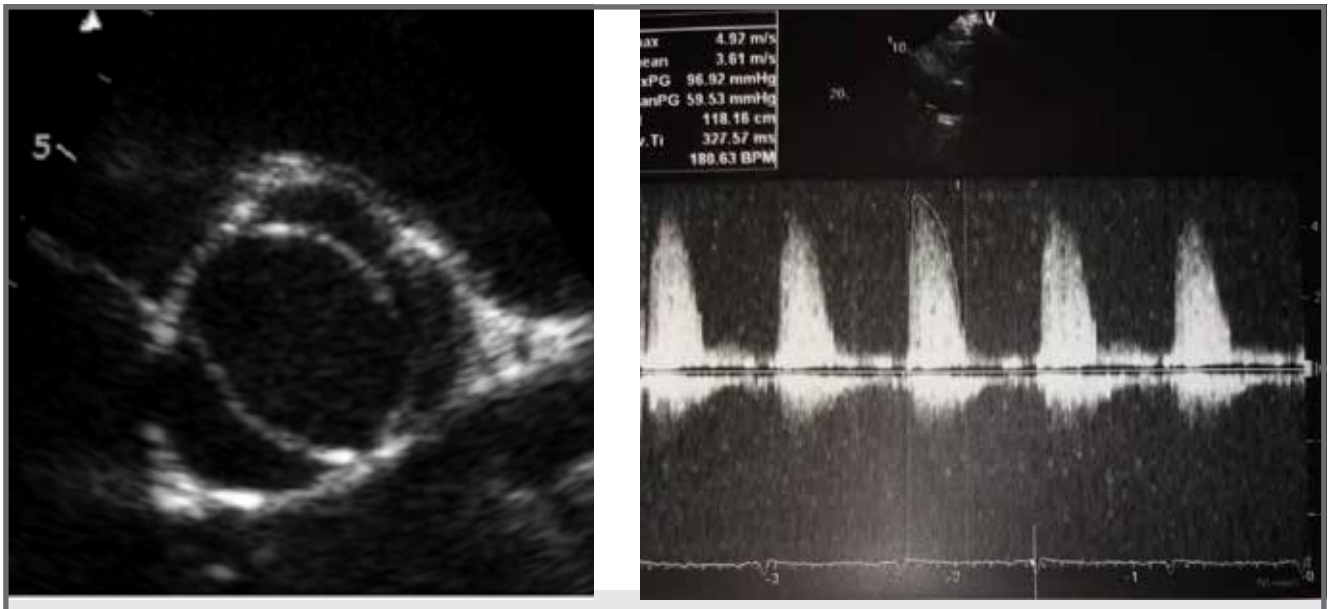

Figure 1. and 2. 2-D and Doppler images of aortic valve and gradient across the valve

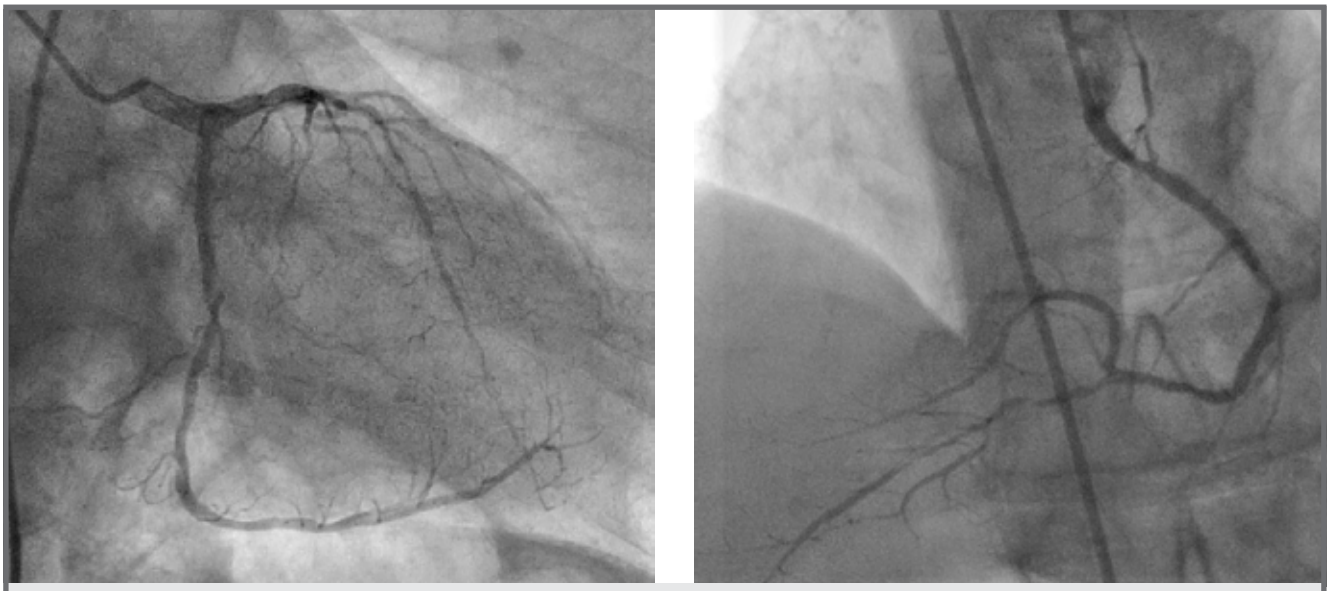

Figure 3. and 4. Coronary angiography images of Right and Circumflex coronary artery

choice would be surgical AVR, as TAVI has not yet been proved (in randomized trials) in low-risk, asymptomatic AS patients with severe AS and bicuspid aortic valve[8-9]. However, for definite answer whether elective AVR is beneficial in asymptomatic patients with severe AS and normal LVEF we will have to wait for the conclusion of several ongoing randomized trials [AVATAR[10-11]; EVOLVED (NCT03094143); EARLY-TAVR (NCT03042104)].

This case report is also instructive as it points that it is possible that asymptmatic patient can have severe AS, normal LVEF, to perform normal exercise testing and still to have significant concomitant coronary artery disease (CAD). According to existing data, up to 50% of symptomatic AS patiens have CAD[12]. What we do not know is what is the prevalence of (silent) CAD in asymptomatic AS patients. This is important as concomitant CAD upgrades the recommendation in a way that AVR is recommended in patients with moderate AS if coronary revascularization by-pass surgery is already indicated. Moreover, unrecognized/silent CAD with coexisting severe AS increase the risk of adverse cardiovascular events.

Exercise testing in patients with valvular diseases is useful in order to unmask latent symptoms and for risk stratification. Given that in patients with severe AS a secondary LV hypertrophy might exist, and with that a secondary/repolarizataion changes in EKG[13-14], it is recommended to perform stress-echocardiography because it is more sensitive in detecting concomitant CAD[12]. However, sensitivity and specificity of stress-echocardiography in patients with pronunced LV hypertrophy is not very high (55, and 75% respectively)[12]. Thus, the real possibility to omit the existence of concomitant CAD probably suports the more frequent use of other imaging methods, namely multislice computed tomography (MDCT) for purposes of screening for CAD in asymptomatic patients with severe AS and normal LVEF.

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Sažetak

Prikazujemo asimptomatičnog pacijenta sa bivelarnom aortnom stenozom koji je upućen na ehokardiografsku procenu težine aortne stenoze, procenu simptomatskog statusa i određivanje daljeg načina lečenja.

Ključne reči: *asimptomatska aortna stenoza, bivelarna valvula, test opterećenja*