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Case Report

Quadricuspid aortic valve in pregnancy: a case discussion

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ABSTRACT

A quadricuspid aortic valve (QAV) is an exceptionally rare congenital heart anomaly first time identified in 1862. This condition involves the presence of four cusps in the aortic valve instead of three, leading to potential complication such as aortic regurgitation. In the reported case 29-year-old pregnant women at 29 weeks gestation presented in OPD for further follow up with no dyspnea on exertion. Electrocardiogram findings were normal and transthoracic echocardiography (TTE) revealed a QAV with three equal sized cusps and one smaller cusp accompanied with mild aortic regurgitation with no other additional anomalies observed. The patient underwent a normal vaginal delivery without any peripartum cardiac complications. While QAV is a rare congenital anomaly it is not uncommon to be associated with aortopathies. This condition makes pregnancy is in high-risk state. Close monitoring especially in second and third trimesters remains of utmost importance. Due to its rarity, the characteristics, natural history, and long-term outcomes of QAV are poorly defined. In general, aortic valve disease during pregnancy can be associated with higher maternal and fetal risks. Pre conceptional counselling is essential to assess and manage high these risks appropriately. For instance patient with significant AVD should be assessed and followed up by multidisciplinary team including cardiologists, obstetricians, cardiothoracic surgeons and anasthesiae both before and throughout pregnancy. In summary, while QAV is a rare congenital anomaly its association with pregnancy necessitates careful monitoring and management to ensure favorable outcomes for both mother and child.

Keywords: Quadricuspid aortic valve, Pregnancy, Aortic regurgitation, Transthoracic echocardiography

INTRODUCTION

Quadricuspid aortic valve (QAV) is a rare cardiac anomaly with incidence less than 0.05% in general population makes this discovery noteworthy.[1] The absence of documented in pregnancy shows how unique this case is and it could contribute valuable instance into how QAV might affect pregnancy and fetal outcomes.[2]

The 1973 classification system by Hurwitz and Roberts is critical understanding the variant forms of QAV. There are 7 subtypes (A to G) based on relative sizes of cusps.[2,3]

This could be crucial when considering potential complications such as aortic regurgitation. QAV is often linked with other congenital anomalies.[4] To manage isolate QAV in pregnancy a multidisciplinary approach typically recommended such as regular monitoring, close follow up, symptomatic management and delivery planning.[5]

This case could help broaden the understanding of how QAV affects pregnancy and potentially guide future research into its clinical implications.

CASE REPORT

A female of 29 year with 29 weeks of gestations came in obstetrics and gynaecology OPD for further antenatal checkups referred from government hospital egmore for follow up for QAV in NYHA-1 with no complaints of

minimal dyspnoea on exertion, palpitation. Chest pain and no other associated symptoms. She was able to perform her routine physical activity. Her vitals was BP 110/70, PR 90 /min regular in rhythm. On physical examination bilateral chest clear. S1 and S2 + with end systolic and end diastolic murmur.

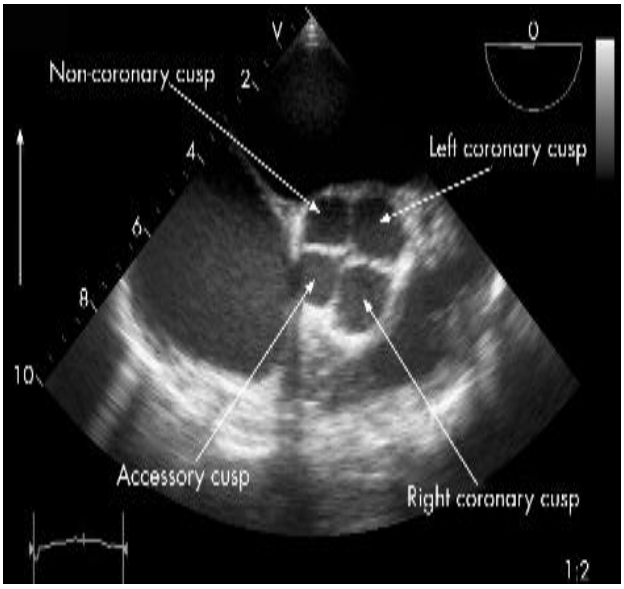

Figure 1: Short axis view of 4 cusps in aortic valve.

In past medical history patient evaluated at 6-year age for upper respiratory infections found out congenital heart disease further advised for yearly follow up and echo till 14 year of age, no history of joint pain fever, in childhood able to perform her normal physical activity.

In first trimester she has done dating and NT scan was normal. Maternal echo was done at 20 weeks. Anomaly scan was done at 20 weeks was normal fetal echo was done at 22 weeks not shows congenital heart disease in fetus.

ECG shows normal sinus rhythm, no acute ST-T changes. 2 D ECHO shows QAV, LVEF-64% no left diastolic dysfunction with moderate AR, no AS. No other structural abnormalities were noted. Cardiologist advised as a low risk for continuation of pregnancy and endocardial prophylaxis at the time of delivery. Advised for review in cardiology outpatient every 4 to 6 weeks interval. She underwent normal vaginal delivery with cardiac monitoring and fetal monitoring, propped up position, oxygen support, by using of adequate analgesia to avoid extra strain on heart. Diuretics used to reduce pulmonary edema and second stage of labour cut down. She discharged from hospital on postnatal day 3 without any intrapartum and postpartum complications. She was on regular follow up in cardiology OPD after delivery.

DISCUSSION

QAV is indeed a rare anomaly with a low prevalence.[1] The presence of quadricuspid valve leads to valve dysfunction aortic regurgitation which often causes volume overload in the left ventricle. The physiological changes during pregnancy especially decrease in systemic vascular resistance often help in accommodating aortic regurgitation better. However. complications can arise if additional factors, like preeclampsia, increase afterload. Putting strain on the cardiovascular system preeclampsia, pulmonary edema if not managed can be life threatening.[2,3]

TTE this technique played a crucial role in diagnosing the condition and management. This helps to visualize valve function, assess the degree of regurgitation and monitor for any signs of heart failure or pulmonary edema. Intra operative TTE is an invaluable tool to assess real time changes and provide targeted therapy.[4]

The combined effect of QAV with aortic regurgitation underlines the complexity of managing cardiovascular conditions in pregnant women, especially in areas with limited resources where cardiac lesions may remain undiagnosed until complications arise.[5]

CONCLUSION

QAV involves four cusps in the aortic valve can lead to potential complication aortic regurgitation. While impact on pregnancy is not widely studied due its rarity. With individual clinical judgement as well as consultation with cardiologist is crucial to determine the most important management plan for each pregnant patient with valvular heart disease. To effectively manage isolated QAV in pregnancy, a multidisciplinary approach is essential-combining regular monitoring, close follow-up, symptom-based care, and coordinated delivery planning to ensure the best outcomes for both mother and baby.

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REFERENCES

1. Sohn J, Arain FD. Two Consecutive Cases of Quadricuspid Aortic Valve and a Review of 149 Cases. J Cardiothorac Vasc Anesth. 2022;36(3):717-23.
2. Zhu J, Zhang J, Wu S, Zhang Y, Ding F, Mei J. Congenital quadricuspid aortic valve associated with aortic insufficiency and mitral regurgitation. J Cardiothorac Surg. 2013;8(1):87.
3. Kaur M, Kyaw H, Ayala-Rodriguez C, Reddy S. Quadricuspid Aortic Valve: A Rare and Incidental Finding. Cureus. 2019;11(11):e6054.
4. D'Addeo G, Costantino MF, Stolfi L, Manzan E, Prestipino F, Luzi G. Quadricuspid Aortic Valve: A Rare Congenital Anomaly Presenting in Adulthood with Severe Aortic Regurgitation. Cardiovasc Innov Appl. 2024;9(1):1-6.

5. Saith S, Saith S, Murthy A. Quadricuspid Aortic Valve: An Introduction for Clinicians. Cardiol Res. 2022;13(1):2-10.

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