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Prenatal diagnosis and outcomes of congenital ventricular outpouching

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Objective

Objectives are to describe the characteristics and prenatal features of congenital ventricular outpouchings and describe outcomes and associated factors for adverse outcomes in congenital ventricular outpouchings.

Methods

This is a retrospective study in a tertiary care fetal medicine referral center in South India with 17 cases of ventricular outpouching reported on prenatal ultrasound between the years 2001- 2022. All cases were evaluated in the antenatal period and outcomes were obtained. Maternal demographics, antenatal findings and ultrasound images were analyzed. Outpouchings with broad base, thin walls and hypokinetic/dyskinetic wall movements were classified as aneurysm and outpouchings with narrow base, thick wall and synchronous wall movements were classified as diverticulum. Postnatal echocardiography and postnatal outcomes were collected telephonically based on a pre-set proforma.

Results

A total of seventeen cases were identified in the study period. All were singleton except one, which was one twin in a dichorionic diamniotic twin gestation. The mean gestational age at presentation was 24 weeks 4 days. On fetal echocardiography, 11 cases (65%) were diagnosed prenatally as ventricular aneurysm, 4 (24%) as congenital diverticulum and 2 (11%) were equivocal for the type of ventricular outpouching. Among the cases, 12 (70.5%) were found in the left ventricle and 5 (29.5%) were in the right ventricle. The congenital outpouching in the left ventricle were mostly apical in location- 9/12 whereas 1/5 in the right ventricle was apical. No associated extracardiac anomaly was noted in our cohort. Termination of pregnancy was done in 6/17 cases out of which one was diagnosed antenatally as diverticulum and 5 as Aneurysm. One case with prenatally diagnosed aneurysm which had opted for pregnancy termination had come for perinatal pathology in which the histopathology revealed presence of myocardium in the thinned-out regions of the left ventricle consistent with ventricular diverticulum. Pericardial effusion was noted in total 5/17 (29%) cases. Pericardial effusion in the first visit was noted in 4 cases out of which 2 were Aneurysm and 2 diverticulum. Out of these 2 opted for termination of pregnancy and in the remaining cases- one had spontaneous regression of effusion. In one case pericardial effusion was noted in the follow up visits. Rhythm abnormality was noted in 6/17 cases out of which 4 pregnancies had a favourable outcome and 2 opted for termination. 11/17 (71%)cases continued pregnancy. 3/11 had adverse pregnancy outcomes- One with left ventricular aneurysm prenatally was a stillborn at 30 weeks, one with left ventricular diverticulum developed FGR with AEDF at 28 weeks and there was neonatal death due to prematurity and one with one twin having left ventricular outpouching differentials with increasing size of the defect and pericardial effusion had cardiac failure and succumbed at day 2 of life. Favourable long term outcomes were seen in 8/11 (73%) of cases. 5 aneurysm, 2 diverticulum and one as differential. Out of these four cases had spontaneous resolution of outpouching at birth. Three has spontaneous resolution on follow up ranging from 2 years to 12 years. One child is on ecospirin for the aneurysm and is 10 years of age at present.

Conclusion

The antenatal differentiation between ventricular aneurysm and diverticulum is challenging. Our data demonstrates increased mortality with outpouchings involving the left ventricle regardless of aneurysm or diverticulum and outpouchings in the right ventricle having good prognosis. Poor prognostic factors in our study were increase in size of the outpouching, appearance of pericardial effusion in later half of pregnancy. As the postnatal outcomes in most cases were favourable with less morbidity, mortality, appropriate prenatal counselling and multidisciplinary care is necessary with cardiological evaluation after birth.