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Prenatal features and outcome of fetal aneurysms and diverticula

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Objective

Description of prenatal features, interventions and outcome of fetal ventricular aneurysms and diverticula.

Methods

Retrospective study and review of two institutional fetal echocardiography databases and indentification of four cases carrying the diagnosis of myocardial diverticulum or aneurysm.

Results

Three ventricular aneurysms, two on the left ventricle (LV) and one on the right ventricle (RV) as well as one RV diverticulum were identified. One of the LV aneurysms was located on the LV apex and the other on the posterior LV wall behind the mitral valve apparatus. Both presented with an irregular rhythm, at 29 and 20 3/7 weeks gestational age (GA) respectively; the arrhythmia was deemed to be premature ventricular contractions in both cases. Regular follow-up every two-to four weeks revealed persistence of the PVCs with low normal ventricular function and no medical antiarrhythmic treatment was necessary. Both fetuses were delivered at term and the prenatal diagnosis was verified by a postnatal echocardiogram and electrocardiogram. Follow-up ranged from two months to seven years with preservation of ventricular function and improvement of the arrhythmic load with no need for medical management in both cases. The RV aneurysm was located at the anterolateral RV wall and was associated with complex congenital heart disease consisting of a large ventricular septal defect, and hypoplasia of the aortic annulus and aortic arch. Progressive ventricular dysfunction was noted in utero. The fetus was delivered at term and the diagnosis was verified echocardiographically. Due to the uncertain results of a surgical correction of the aortic arch anomaly, in presence of a large VSD and persistent severe biventricular dysfunction, palliative care was chosen by the parents, resulting at the newborn’s death on the sixth day of life. The RV diverticulum was located at the RV apex and was associated with a moderate pericardial effusion that was drained at 21 weeks gestational age due to lung compression. The effusion, decreased gradually and the fetus was delivered at term. The newborn was discharged home on day 10 of life after remaining hemodynamically stable, with no significant pericardial effusion and with almost normal ventricular function. Of note is that this patient was lost to follow-up and presented at 7 months of age with severe left ventricular dysfunction due to parvo myocarditis from which she recovered, with residual mild-to-moderate biventricular dysfunction.

Conclusion

Cardiac diverticula and aneurysms have a variable presentation prenatally, depending on their ventricular location and association with other cardiac defects. In utero management, such as pericardial effusion drainage may be beneficial for postnatal outcome in diverticula; poor outcome is usually associated with co-existent significant congenital heart defects and ventricular dysfunction.