Closure of patent ductus artriosus by transcatheter technique in a pregnant patient

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Abstract

We report a case of Patent ductus arteriosus (PDA), which was closed successfully by transcatheter technique in a pregnant patient. This procedure was safe, effective and uncomplicated, obviating the need for surgery in this high risk patient.

Introduction

Patent ductus arteriosus (PDA) is a common cardiac anomaly (1 in 3000 births), nearly 15% of all adults with congenital heart disease have PDA.[1] If PDA is an isolated lesion, it is almost uniformly undesirable. Surgical management of the PDA has been the "gold standard" since 1939.[2] Porstmann et al. first demonstrated the feasibility of nonsurgical closure of the PDA in 1967 without thoracotomy.[3] Since then Transcatheter occlusion of PDA has evolved into an important form of therapy with excellent results and it obviates the need for surgical intervention for these defects.[4] We report a case of PDA which was closed successfully by Transcatheter technique during pregnancy. To our knowledge, this is the first reported case from Pakistan, when PDA was closed successfully by Transcatheter Technique during pregnancy.

Case Report

A 27 years old pregnant woman in her second trimester in 20th week of gestation presented with history of worsening shortness of breath at rest and on exertion, for the last 02 months. On examination, she had good volume regular pulse at 105/min. Her JVP was raised and she had pedal oedema. Examination of precordium showed left parasternal heave. On auscultation she had continuous "machinery" murmur. Transthoracic Echocardiogram (TTE) revealed dilated left atrium (LA) and left ventricle (LV). PDA of 4.8 mm in diameter was seen. Her predicted pulmonary artery systolic pressure (PASP) was 50 mm of Hg. Transcatheter occlusion of PDA was planned. Before starting the procedure, a lead sheet was placed on the table and her abdomen was covered completely with another lead apron as well for added radioprotection. Cardiac catheterization revealed mean PASP of 54 mm Hg and Type 'A' PDA of 5.00 mm in diameter, which was occluded successfully with 10/8 mm Amplatzer PDA occluder device under local anaesthesia. PASP reduced to 25 mm of Hg immediately after the procedure. Total radiation time was only 45 seconds. Follow up TTE at 24 hours did not show any residual shunt. She was reviewed two weeks after the procedure. Her symptoms had significantly improved and later, she delivered a healthy baby at 38 weeks of gestation. Follow up TTE at six months revealed a normal sized LA and LV. Pulmonary artery systolic pressure was 20 mm Hg. She had no residual leak.

Discussion

The normal closure process of PDA begins within few hours after birth and unique pathological and histological findings have been noted in the ducti that are not destined to close.[5] Smaller lesions are not associated with haemodynamic abnormalities or left heart volume overload but these defects are at significant risk for endarteritis. Correction of these defects is therefore recommended.[6,7] PDA, if left uncorrected can result in a number of long term complications. Flow across the PDA is determined by the size of the defect and the compliance of the lung vasculature.[8] Moderate to large sized defects are associated with left sided cardiac volume overload. However, patients who are asymptomatic before pregnancy may become symptomatic and their clinical condition may deteriorate due to significant increase in volume overload during pregnancy. Transcatheter closure of PDA may be the treatment of choice during pregnancy as it avoids the complications of surgery, shortens the hospital stay and resultantly may improve morbidity and mortality in these high risk patients.

Conclusion

Transcatheter treatment to occlude PDA is a safe and effective procedure during pregnancy.

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