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Antenatal Diagnosis and Successful Delivery of a Fetus with Complete Heart Block

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ABSTRACT

We describe here a case of a 26 years old primigravida, who was diagnosed antenatally to have fetal complete heart block (CHB) by fetal echocardiography, followed by successful normal vaginal delivery. Patient had a regular antenatal checkup without any diagnosed abnormality till almost 30 weeks of gestation. At 30 weeks of gestation an irregular and fetal heart rate was detected on clinical examination. Ultrasonography and fetal echocardiogram was performed which revealed a complete heart block (atrial rate of 140/minute and a ventricular rate of 50 / minute), without any evidence of cardiac anomaly or sign of fetal hydrops. Since there was no evidence of hydrops, it was decided to follow the case with echocardiogram and electively pace the baby after delivery. Oral prednisolone (4mg/kg body weight) was started to arrest the further damage to the fetal cardiac conduction system The fetal heart rate remained stable at 50 – 55 / minute. On futher evaluation Anti Ro Anti nuclear antibody (ANA) test for maternal lupus was found to be positive. At 37 week patient went into spontaneous labour and she delivered a female child with an APGAR score of 8 at 1 minute, under close monitoring of interventional cardiologist. The electrocardiogram after birth revealed complete heart block (CHB). It was decided to implant an epicardial (VVI) single chamber pacemaker. The parent of the child declined the option of pacemaker implantation. Baby had a sudden cardiac arrest 3 days later, possibly due to cardiac arrhythmia. SUMMARY : A rare case of fetal congenital heart block diagnosed antenatally in a woman with autoimmune disease, planned for elective ventricular pacing after delivery. The case highlights importance of team work in managing these types of cases in a tertiary care hospital.

Keywords : Congenital Heart Block, Echocardiography , Autoimmune disease

INTRODUCTION

Congenital heart block is a rare fetal heart conduction defect making an incidence of < 3% . It was first reported by Morquio in 1901 and was diagnosed antepartum in 1995 by Plant and Steven (1). This dysfunction of the conduction system can occur in association with structural heart disease such as atrioventricular septal defect , abnormality of great arteries etc or as an isolated defect. It occur exclusively in mother with autoimmune disease with antibodies to the SSa (Ro) or SSb (La) antigen. Such type of heart block carries a substantial mortality and morbidity and required permanent cardiac pacing in most of surviving children .

CASE

We describe here a case of 26 year old booked primigravida, . On her routine antenatal checkup an irregular and slow fetal rate was observed at 30 weeks of pregnancy . Abdominal ultrasonography showed a single live fetus with severe bradycardia. Fetal echocardiography revealed complete heart block (atrial rate of 140 beat /minute and ventricular rate of 50 beats / minutes). There was mild cardiac chambers dilatation with normal ventricular systolic function , without any structural heart disease or fetal hydrops (Figure 1). Her anti RO (SS - A) and anti NA (ANA) tests for systemic Lupus erythematosus were found to be positive.

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Patient was kept on conservative treatment with the plan of elective pacing after delivery. She was followed up with more frequent antenatal visits and serial fetal echocardiography. She went into uneventful spontaneous labour at 38 weeks of gestation and normally delivered a female baby of 2.5 kg weight with an APGAR score of 8 at 1 minute. The heart rate of the baby at birth was 50 beat / minute. Baby was shifted to intensive care unit for observation and further management. The electrocardiogram of newborn revealed complete heart block with a P-P rate of 140/ minute and a narrow QRS escape rhythm at 50 /minute. Elective pacing with an epicardial (VVI) single chamber pacemaker was decided by the cardiologist. The parent of the child declined the option of pacemaker implantation. Baby had a sudden cardiac arrest 3 days later, possibly due to cardiac arrhythmia.

DISCUSSION

Congenital heart block may develop as the consequence of diffuse myocarditis and fibrosisin the region between the atrioventricular node and bundle of His (2) .It is considered to result from the transplacental passage of autoantibodies into the fetal circulation resulting in damage to the otherwise normally developing heart. Heart block may be tolerated or may lead to Strokes – Adams attacks or heart failure in the fetus or the infant.

Detection of fetal cardiac arrhythmia has become more common in recent times due to extensive use of real time ultrasonography and fetal echocardiography. Serial fetal echocardiography at 16,18, 22, and 24 weeks of gestation may be reasonable for all women at risk. More frequent echocardiography may be advisable if abnormalities are detected (1).

date no definite evidence exists for any role of prophylactic plasmapheresis or glucocorticoids. Such treatment may have a vital role in the resolution of pleuropericardial effusion (3). In utero environment is preferred as long as possible because of the low resistance circulatory pathways, thereby providing

minimal work to maintain cardiac output. This must be balanced against the heightened transfer of maternal antibodies as the pregnancy progress. No gender based difference in frequency or prognosis of congenital heart block was found (1). Long term outlook is not good, with one third of affected infants dying within 3 years (2).

CONCLUSION

The case highlights the need for diligent fetal monitoring with serial fetal echocardiography and with more frequent antenatal checkups in patients suspected to have congenital heart block. Such type of cases has a high mortality should be managed in a centre with well equipped obstetrical and cardiological services. It also illustrates the fact that such cases can be managed conservatively by normal delivery, albeit with close monitoring.

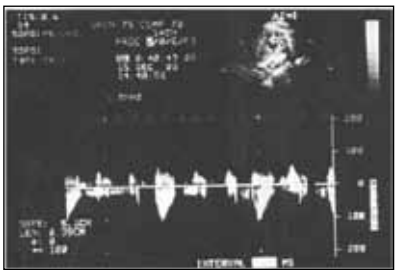

Figure 1 : Fetal cross sectional echocardiogram showing Doppler flow pattern in a case of complete heart block. Flow below the baseline indicates aortic antegrade flow while flow above the baseline indicate antegrade flow across the mitral valve.

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