Diagnosis and management of a case of Supraventricular tachycardia in DCDA twin with non-immune hydrops fetalis

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Introduction:

• Sustained tachyarrhythmia are the most common cardiac rhythm disturbances in the fetus. The vast majority of these are due to fetal supraventricular tachycardia (SVT) which is characterized by a heart rate of 200-300 bpm. The diagnosis of SVT can be established by using M-mode echocardiography with a sampling line placed across atrial and ventricular walls. SVT occurs due to an autonomous focus or a re-entry mechanism. Cardiac malformations are rare occurrence. It is a serious condition that can be treated easily.
• If left untreated, SVT can lead to cardiac failure, fetal hydrops and intrauterine fetal death

Case:

• We present a case of fetal SVT in DCDA twin pregnancy where correct diagnosis and successful treatment led to good outcome.
• A DCDA pregnant lady was referred to the fetal medicine unit at 32 weeks gestation after a routine growth scan that showed fetal ascites and pleural effusion in one of the twins. On detailed evaluation, fetal hydrops was confirmed. On fetal echocardiography, supraventricular tachycardia of 295 – 307 bpm was noted in twin 1 with a structurally normal heart. There was no evidence of cardiomegaly or AV regurgitation. This was evaluated by the fetal cardiologist and treatment with Flecainide tablets 100 mg 3 times daily was started. A normal maternal ECG (Electrocardiography) was confirmed before commencing treatment. Conversion to sinus rhythm was noted on day 5 of treatment. Flecainide levels in maternal blood were checked on day 5 to confirm therapeutic range. Subsequent follow up scan at 35 weeks confirmed normal sinus rhythm with complete resolution of ascites and pleural effusions. The babies were delivered at 37 + 6 weeks by elective caesarean section due to fetal presentation. Twin 1 (2505 g; APGAR : 5, 8 ), Twin 2 (2610 g; APGAR : 9, 10). Twin 1 with SVT was observed in special neonatal unit for 24 hours. Electrocardiogram (ECG) was performed and Propranolol 3mg TDS was commenced. Baby is being followed up at the paediatric cardiology centre to observe for any recurrence of tachyarrhythmia.

Discussion:

• Sustained tachyarrhythmia are the most important rhythm disturbances in the fetus. The vast majority of these are due to atrioventricular re-entry mechanisms in the presence of an accessory conduction path way, it is characterized by one to one atrioventricular conduction. If untreated this can lead to significant fetal morbidity and mortality. Intrauterine therapy with Class 1 c anti-arrhythmic drugs such as Flecainide can reduce the fetal mortality below 5-10%. Flecainide slows conduction in most cardiac pathways. It has excellent maternal and fetal bioavailability, even in the presence of fetal hydrops and hence makes it an attractive therapeutic option for the indirect therapy of fetal SVT.

Conclusion:

• An accurate diagnosis of the nature of the rhythm disturbance is possible by M-mode echocardiography that allows differentiation of SVT, atrial flutter and ventricular tachycardia.
• Flecainide is safe and highly effective medication in hydropic fetuses. Conversion to sinus rhythm can be expected between 3 -14 days.

References: