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Fetal tachyarrhythmia in twin pregnancy - case report

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Summary

The incidence of fetal arrhythmias is less than 1%. In 47-68% of cases, tachyarrhythmia is presented with supraventricular tachycardia (SVT) with heart rate ranges from 200-300 beats per minute. The mother is usually asymptomatic with no signs of fetal compromise. Fetal hydrops is associated with up to 64% of cases and may require more medications and a longer treatment period. This very rare condition has not been described in twin pregnancy yet. The authors present a case of supraventricular tachycardia in one twin with initial hydrops in 28th week of pregnancy. Considering gestational age, drug therapy was first treatment option. After administration of digoxin and sotalol, the twin with SVT presented with severe bradycardia (70-80 beats per minute). The heart rate of healthy twin remained normal. The pregnancy was terminated by cesarean section 24 hours later due to the onset of preterm labour.

Key words: Fetal tachyarrhythmia; Twin pregnancy; Supraventricular tachycardia; Bradycardia; Digoxin.

Introduction

The incidence of fetal arrhythmias is less than 1% [1]. In 47-68% of cases tachyarrhythmia is presented with supraventricular tachycardia (SVT) with heart rate ranges from 200-300 beats per minute [2]. The mother is usually asymptomatic with no signs of fetal compromise. Fetal hydrops is associated with up to 64% of cases and may require more medications and a longer treatment period [3]. This very rare condition has not been described in twin pregnancy yet. The authors present a case of SVT in one twin with initial hydrops in 28th week of pregnancy.

Case Report

The authors present a 33-year-old secundigravida with twin pregnancy from IVF/ET procedure who was admitted to the present Clinic in 28th week of gestation with regular contractions that were suppressed after acute intravenous tocolyisis administration. The first twin was at breech position and the second one was transverse. At 15th day of hospitalization, tachycardia of the first twin was noticed on routine baby Doppler up to 250 beats per minute. Urgent ultrasound exam showed fetal tachycardia with initial hydrothorax of the affected twin with normal blood flows in cerebral media artery and umbilical artery. Normal morphology and heart rate of the healthy twin was confirmed. Pediatric cardiologist was consulted and recommended intravenous application of 0.4 mg digoxin and 80 mg of oral sotalol. Fetal echocardiogram of the affected twin was performed and showed right atrial dilation with some hydropic effusion indicating possible heart decompensation, with no morphologic heart defects found. Dose of sotalol was then increased up to 3×80 mg. She also received dexamethason for stimulation of fetal lung maturation. Serum potassium was 3.6 mmol/l and digoxin level was 0.38 nmol/ml. Next morning severe fetal bradycardia (80 beats per minute) of previously tachycardic twin was noticed. Ultrasound exam showed high flow resistance in the umbilical artery with absence of diastolic flow. Heart frequency of healthy twin remained normal, with regular Doppler flows. 'Transport in utero' was organized to Tertiary Hospital. Almost 24 hours later the pregnancy was terminated by urgent cesarean section due to the onset of labour. The healthy twin weighted 1,245 grams with Apgar scores 7 and 8 and the tachycardic one weighted 1240 grams with Apgar scores of 3 and 4. Both newborns were transported to neonatal intensive care unit for further treatment. After two months they were both dismissed without any visible neurological consequences at the time. The tachycardic twin remained on rythmonorm therapy until next follow up.

Discussion

Normal fetal heart rate ranges from 120 to 160 beats per minute by 30th gestational week [4]. Fetal distress and chorioamnionitis may cause increased fetal heart rate and should be excluded. Medical management in cases without hydrops may consist simply of digoxin therapy, whereas in others, adding a second agent such as flecainide, procainamide, sotalol or amiodarone may be needed [5]. Digoxin is considered as first-line drug treatment of fetal SVT, and maternally administered digoxin is usually successful in converting the tachyarrhythmia in the non-hydropic fetus [6, 7]. The diagnosis can be confirmed by fetal M-mode echocardiography. As mentioned previously, fetal tachyarrhythmia conversion and treatment is more difficult in presence of hydrops as the result of fetal decompensation, due to poor transplacental drug transfer [8]. Delay in cardioversion can lead to intrauterine and neonatal death, so early disorder recognition is crucial. The present therapy

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was administered according to the recommendation protocols and clinical experience described in singleton pregnancies since similar cases in twin pregnancy have not been described. This treatment did not achieve positive outcome for the twin affected by SVT, but it was also without any negative effect on the healthy twin. In a patient like this, every obstetrician should know how to treat the affected twin and what impact it would have on the other healthy twin. Question of medicament-induced bradycardia is imposed and when to intervene in pregnancy termination regarding cost benefit of premature delivery.

Conclusion

Intrauterine medicament treatment of fetal tachyarrythmias is well known. Most of the literature refers to the therapy of fetus in singleton pregnancies, without cases of fetal tachyarrhythmias in twin pregnancy and the impact of antiarrythmic drugs on both of them. Further studies of tachyarrythmia in twin pregnancies are needed.

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