Fetal tachycardia: perinatal handling and medium term follow-up. What have we learned?

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Objective

Fetal tachycardia is reported to have a high morbidity and mortality during pregnancy. The study we present aims to describe the types of fetal tachycardia we have diagnosed in our fetal medicine unit in Vall D'Hebrón Hospital, Barcelona, from 2004 to 2015. Treatment used in each case and perinatal manage carried out are reported. Finally, we expose our perinatal global results and the postnatal tachycardia relapse rate years after eleven years of follow-up.

Methods

This is a descriptive retrospective study including 44 cases of fetal tachycardia diagnosed in Vall d'Hebrón Hospital (Barcelona) from January 2004 to December 2015. Diagnosis and follow-up were carried out in our fetal medicine unit: a multidisciplinary work team comprised of both obstetricians and paediatric cardiologists. Patients were diagnosed by fetal echocardiography and controlled using cardiac sonography, cardiotocographic register (CTG) and maternal EKG, from one to three times a week when required. A blood sample measuring digoxin levels was solicited before every consultation in patients following oral treatment and blood levels strictly controlled. Therapeutic levels of blood digoxin were strictly controlled and individualized. Clinic side effects on women were also taken under consideration. A minority of cases needed for hospital internship to achieve proper control.

Results

We analyzed 44 cases of fetal tachycardia. The mean gestational age of diagnosis was 29 SG (ICC 28-35SG)), and 27% of them were found in hydrops situation at diagnosis. We found 6 patients (14%) with Flutter (2 of them presenting Ebstein cardiac malformation), 5 patients (11%) with long AV time interval that, postnatally, corresponded to: 2 atrio-ventricular reentrant tachycardia conduction delays, 1 atrial tachycardia, 1 stillbirth at 32 gestation weeks, 2 without postnatal recurrence and finally, 28 patients (63%) with suspected AV atrio-ventricular reentrant tachycardia. We were not able to reach a diagnosis in the remaining patients. Depending on the type of arrhythmia and presence of hydrops, treatment was started with: digoxin (36% of cases), digoxin and flecainide (36%, initial or added later), sotalol added to digoxin and flecainide (7%) or other treatments (5%). Elective cesarean section was decided in 16% of cases (most of them at the beginning of the recruitment) due to the impossibility for CTG control during labor. Cordocentetic treatment was not used in any case. Our fetal cardioversion rate and later maintenance was up to 81% during pregnancy (95% last 5 years). Since 2011 cases reverted in-utero had their treatment progressively suspended at 35 weeks of pregnancy, without presenting pre or postnatal recurrence. After birth, 5% of our recruited patients had pre-excitation shown at ECG. 27% of them presented postnatal relapse. Significative differences on postnatal recurrence was not found between the ones presenting hydrops at diagnosis. Postnatal antiarrhytmic treatment was given to 47% of patients and 2 electrophysiological studies were conducted. Global survival after 11 years of follow-up in our series is 93%. Adverse cases include 1 stillbirth and 2 postnatal deaths, all of them presenting associated hydrops. 92% of patients are nowadays controlled without need for medical treatment and have not presented any recurrence. The presence of tachycardia with hydrops at diagnosis and long-AV time are found to be useful predictors for poor cardiac prognosis. 5% of our registered cases presented neurological sequelae due to hemodynamic compromise during tachycardia.

Conclusion

The main cause for fetal tachycardia in our study was re-entry mechanism as it has been described before. Transplacental treatment is highly effective with a good prognosis at long term. Recurrence rate at medium term has been found to be insignificant.