Atioventricular block (AVB): antenatal diagnosis and late postnatal follow-up

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Objectives- To investigate intratutine diagnostic spectrum, late postnatal evolution of AVB and risk factors associated to poor outcome.

Methods - From 12/1994 to 12/2010, 33 consecutive fetuses with AVB (age: 18-38w; mean: 31.3±3.9w) were identified by ECHO and followed-up after birth (1.1-16.0y; mean: 7.9±3.4y). Variables selected for analysis: maternal disease, gestational age (GA) at delivery, degree of hydrops, atrial and ventricular rates, structural cardiac lesions, cardiomyophaty.

Results- The maternal mean age was 28.4±4.4y and 48.5% had a connective tissue disease (n=33). The GA at delivery ranged from 28-38 (median: 37w) and the atrial and ventricular rates from 96-162 and 33–91 beats/min, respectively. Significant hydrops occurred in 53.3% and death, including 2 newborns with pacemaker in 11/33 (33.8%) of which 45.4% during the prenatal period. GA <37w was found in 67.8% of stillborns and in 83.3% of neonatal death. Two groups were analyzed: G1(n=24): isolated AVB; G2(n=9): AVB plus significant structural heart disease (left atrial isomerism and congenitally correct transposition: 77.8%). Sustained bradycardia was seen in both groups but intermittent bradycardia (3 cases) only in G1. Complete AVB was diagnosed in all fetuses of G2 and in 16 of G1. Of the remaining 8 cases, all with second-degree block, 3 progressed to complete AVB, 3 to sinus rhythm and 2 remained stable. Death occurred in 6/9 in G2 and in 5/24 in G1, of whom 2 with second-degree block. Fourteen pacemakers (8 at first day) were implanted, mostly in G1 (86.7%). From the 22 survivors, 18 are asymptomatic (8 with pacemaker) and 4 with pacemaker and NYHA II or III (1 resynchronization therapy). The risk factors associated to death included hydrops III and IV (p: 0.004), significant structural heart disease (p: 0.010), ventricular rate < 55 beats/ min (p: 0.001), and GA <37w (p: 0.003). Dilated cardiomyopathy was associated with HR <40 beats/min (prenatal period) and with long term pacing (postnatal period).

Conclusions- Considering the high frequency of intervention and death, the AVB is a severe fetal arrhythmia, with early and late important repercussions, mainly in the group with associated congenital heart disease, severe bradycardia and early presentation. The fetal ECHO is very useful for early detection which contributes to optimize the pre and postnatal management.