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RESOLUTION OF HYDROPS FOETALIS CAUSED BY ATRIOVENTRICULAR BLOCK: GOOD POSTNATAL EVOLUTION WITH TERBUTALINE TREATMENT.

Type:

Recommendation, comment, report

Abstract:

Case of complete atrioventricular block with a poor prognosis (hydrops foetalis and foetal cardiac frequency < 55 beats/min) caused by anti-La and anti-Ro antibodies. Intrauterine symptoms improved after treatment with terbutaline, permitting foetal viability and successful postnatal treatment with a cardiac pacemaker.

Keywords:

congenital atrioventricular block, terbutaline, foetal arrhythmias, foetal cardiology, hydrops foetalis

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Introduction:

Complete atrioventricular block (CAVB) is rarely seen, as it occurs in only 1:11 000 to 1:20 000 newborns.[9] It is produced by a primary alteration of the atrioventricular conduction system if it is associated with a heart disease (asplenia/polysplenia syndrome, left atrial isomerism, atrioventricular septal defect, discordant atrioventricular connection).[2,9,10] It can also be caused by an alteration in the conduction system produced by an inflammatory reaction in cases of expectant mothers with anti-Ro (SSA) and anti-La (SSB) antibodies.[3,910] CAVB cases have been described in the absence of any of these pathologies, and this suggests that they could be due to long QT interval syndrome or a viral infection.[1,5]

There is a serious risk of mortality in CAVB, mainly in those cases associated with hydrops, foetal cardiac frequency $\leq$ 55 beats/min (bpm), and premature delivery.[6,10] The natural evolution of prenatally diagnosed CAVB is poor,[6,10] but insertion of a pacemaker in a newborn has been shown to have good results if the foetus is removed during the viable stage and has an adequate weight. As a result, transplacental treatment with anti-inflammatory drugs has been tried but shown little results.[8] Currently, immunosuppressive treatment with corticoids is being tried [7] when the block is still partial, or they may be used in conjunction with positive inotropic drugs, anticholinergics, or b-mimetics (ritodrine, salbutamol, terbutaline) in the attempt to

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maintain adequate ventricular frequency and thus prevent hydrops foetalis from occurring.[4,7]

We discussed a CAVB case produced by anti-Ro (SSA) and anti-La (SSB) with hydrops foetalis. After terbutaline treatment, the hydrops went into remission and the patient progressed well with a postnatal pacemaker.

Case report:

Expectant mother 28 years of age whose husband has various close relatives with long QT syndrome. Her first pregnancy resulted in a boy born at full term who progressed well. In her second pregnancy, the 30-week old foetus was diagnosed with hydrops foetalis caused by foetal heart block; it was born at 33 weeks and died during the first 24 hours. In the hydrops foetalis study protocol, maternal Sjögren's syndrome was diagnosed with SSA/Ro52 and SSA/Ro50 antibodies and positive SSB/LA and anti-cardiolipin antibodies in a low titre.

In the third pregnancy, a gestational exam was carried out with a combined low-risk test (1:526, nasal bone present and normal ductus venosus). The foetal morphology scan was within normal limits with a normal foetal echocardiogram and a foetal heart rate of 130bmp.

At 26 weeks, a partial atrioventricular block was observed with foetal heart rate at 75 bpm. We began treatment with dexamethasone (8mg/day), and at 28 weeks we observed complete AV block with foetal heart rate at 56 bpm and hydrops foetalis (foetal ascites, pericardial effusion and foetal edema) (image 1). In light of these findings, we decided to treat with terbutaline (5mg every 8 hours). By week 30, the hydrops foetalis was in remission and we observed a foetal heart rate of 68-70 bpm. The pregnancy was

monitored until week 34; it progressed well, with foetal heart rate between 65 and 70bpm. At week 35, a female infant weighing 2300g with an Apgar score of 8-10 and a heart rate of 60 bpm was delivered by caesarean section.

At time of admission, she was in good general condition and presented grade II-IV systolic murmur in the subclavian fossa with no signs of heart failure except for moderate cardiomegaly. An ultrasound ruled out pericardial effusion and structural heart disease; the permeable ductus and oval foramen were appropriate for the newborn's age. The electrocardiogram showed signs of complete atrioventricular block with an atrial frequency of 130 bpm and ventricular frequency (HR) of 60 bpm 8image 2). At 24 hours, when the HR had dropped to 55 bpm, we placed a temporary intravenous pacemaker through the axillary vein (following an attempt to catheterise the internal jugular vein which failed due to the patient's small size); this stabilised the heart rate at 120 bpm. Lastly, when the patient was 9 days old, we implanted a permanent epicardial pacemaker (image 3), and the patient had progressed well by one year.

Discussion:

In the case of maternal systemic lupus erythematosus with Anti-Ro or anti-La, the probability of presenting with an AVB is between 2-5%,[3] but in cases with a previous episode of foetal AVB, probability increases to 15-20%. There is no prognostic factor to predict whether or not pregnancy with anti-Ro or anti-La antibodies will develop into AVB.[4] Therefore, the foetus should be closely monitored, and if partial AVB does appear, corticoid treatment could be established as early as possible in order to reduce cardiac damage.[7]

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In our case, this close monitoring was carried out, and dexamethasone treatment was established in an attempt to prevent it from developing into hydrops as it had in the previous pregnancy. When the treatment was no longer effective and the foetus became hydropic due to CAVB with a heart rate below 55 bpm, terbutaline treatment was administered to increase foetal heart rate and achieve remission of hydrops symptoms. This objective was accomplished, and pregnancy continued up to 34 weeks. At this time a caesarean section was performed, and permanent treatment in the form of a cardiac pacemaker was provided for the newborn.

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Figure 1

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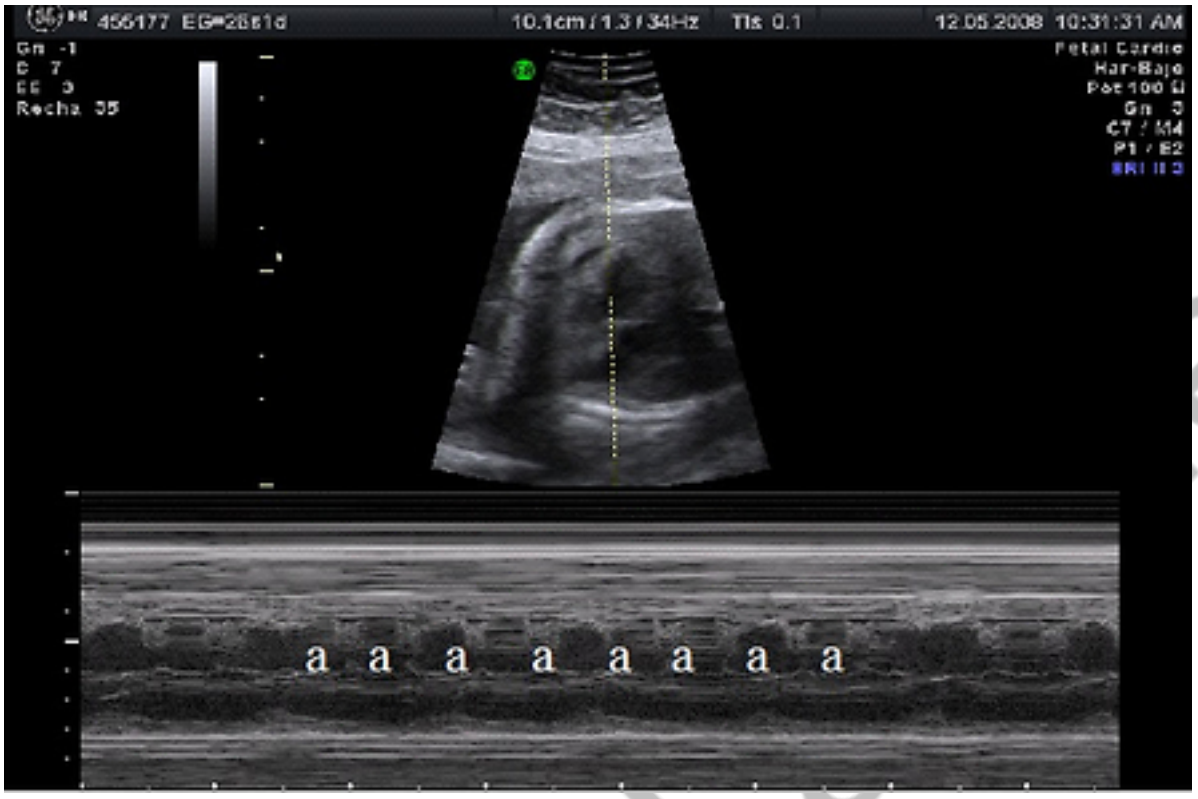

Images 1. Complete atrioventricular block

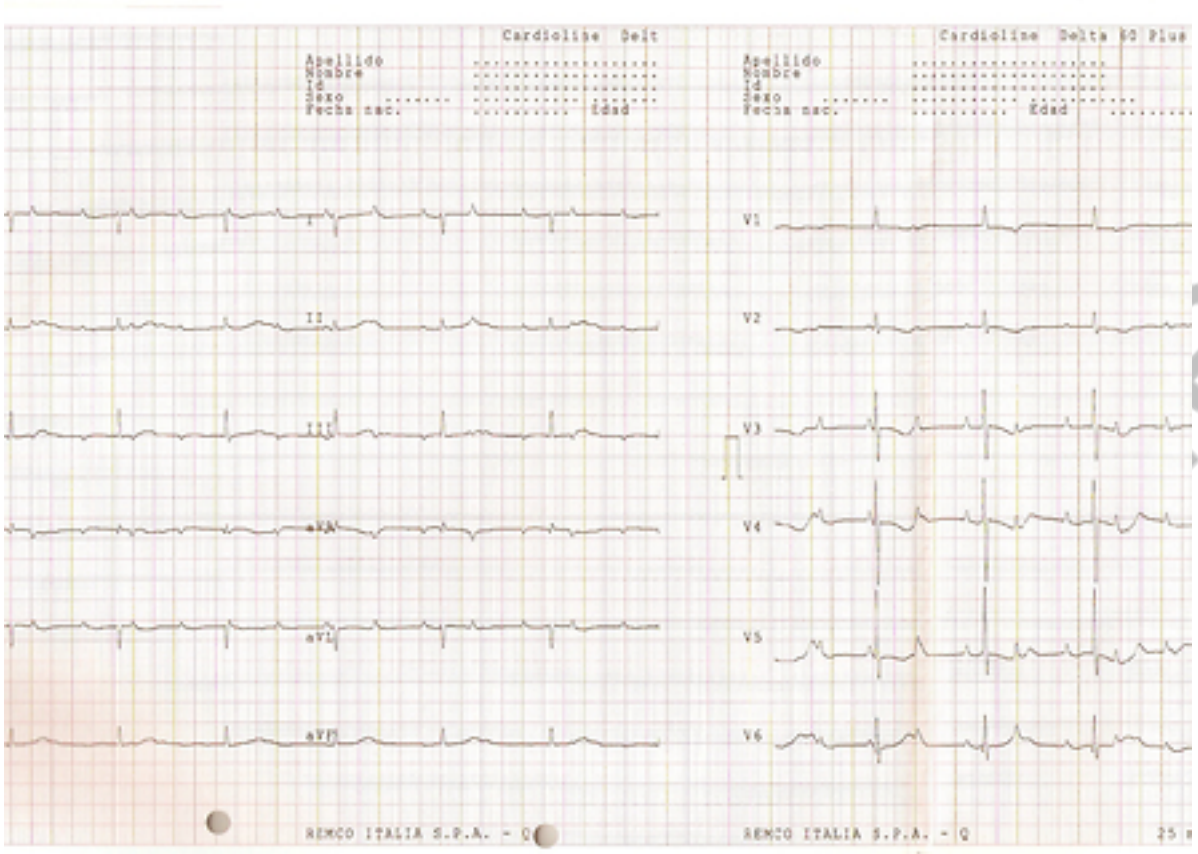

Imagen 2. Electrocardiogram of the newborn with complete atrioventricular block

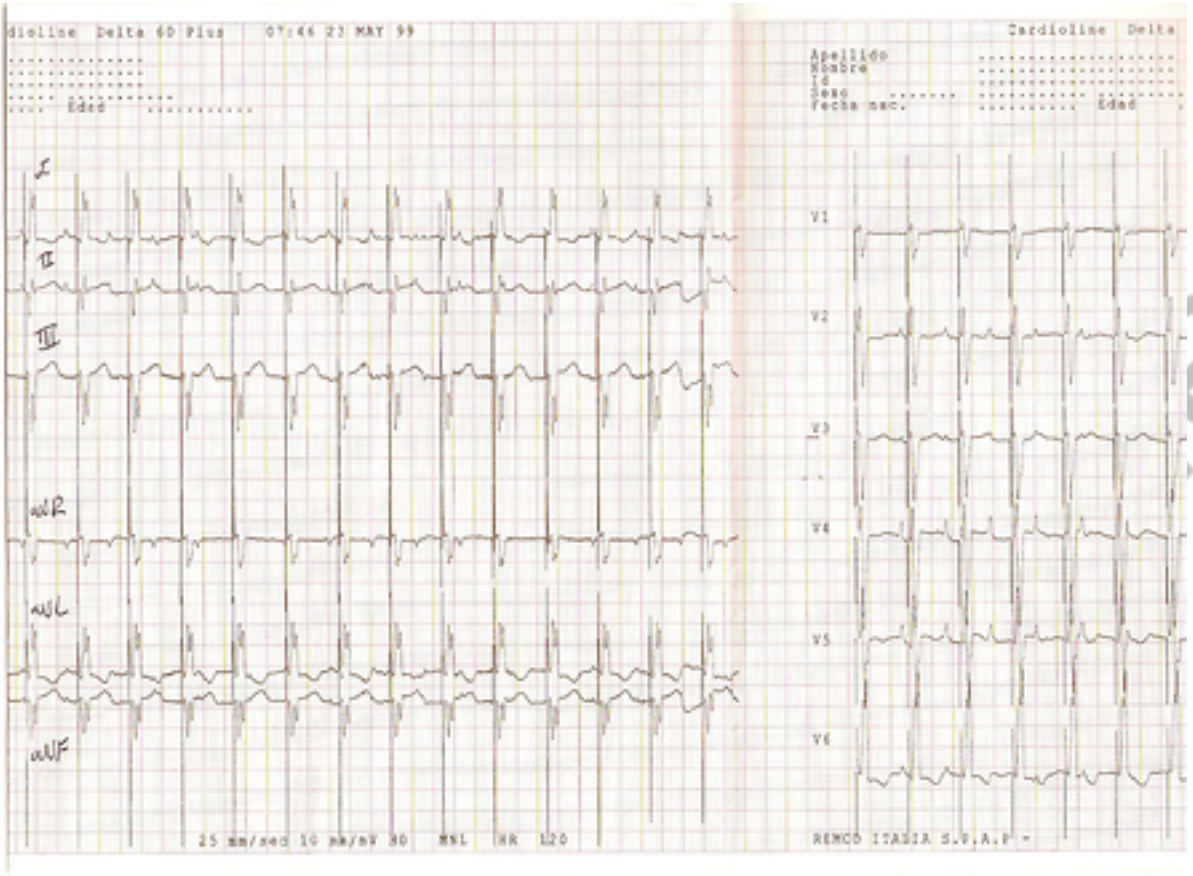

Imagen 3. Electrocardiogram of the newborn after the placement of the pacemaker

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Figures

Figure 1 - Download source file (65.88 kB)
Images 1. Complete atrioventricular block

Figure 2 - Download source file (1.54 MB)
Imagen 2. Electrocardiogram of the newborn with complete atrioventricular block

Figure 3 - Download source file (1.63 MB)
Imagen 3. Electrocardiogram of the newborn after the placement of the pacemaker