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Transient Complete Heart Block in Post-Partum Period: A Rare Presentation

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1. Introduction

The finding of a high-degree Atrio-Ventricular (AV) block in pregnancy or post-partum is rare Congenital heart block are often undiscovered till adulthood and may therefore be present during pregnancy or postpartum. As pregnancy is a state which requires significant augmentation of cardiac output, hence complete AV block is of particular concern where heart rate cannot increase, and cardiac output becomes solely dependent on stroke volume [1,2]. This concern regarding the changes in haemodynamic status during delivery and labour, often prompts the physicians to consider temporary pacing even in asymptomatic women. Hereby, we present a case report of a 30-year-old female with history of recent caesarean section delivery (LUCS) [3,4].

2. Case Report

A 30-year-old female was admitted with complaints of uneasiness and palpations. She was having history of uneventful lower uterine caesarean section 7 days back with a 1-month preterm baby. Her palpitations were not related to exertion, did not have any alarm clock pattern, and were not associated with any events of urination. She did not report any syncope, chest pain or shortness of breath. She was investigated thoroughly, and her ECG showed intermittent paroxysms of complete heart block (FIG. 1). ECG at other times was showing incomplete RBBB with Left axis and intermittent complete AV dissociation and occasional VPCs. The rate varied between 30 bpm to 60 bpm. She was given Atropine 0.3 mg QDS and was shifted to our hospital where repeat ECG showed similar findings (FIG. 2). Although she was not having incapacitating symptoms, Temporary pacemaker implantation was done as a life saving procedure. Backup rate of 60 bpm Sensitivity of 0.5 mV and output of 5 V was kept. Her ANA profile, anti-RO antibody was done after expert rheumatologist opinion which was negative.

A 24-hour Holter monitoring was done which showed few couplets, few APCs, ventricular trigeminy with maximum and minimum heart rate being 135 bpm and 48 bpm. After few days, patient had sinus rhythm and discussion regarding Permanent pacemaker was deferred in view of sinus rhythm. Echo showed no structural heart disease with good LV systolic function with LVEF of 60%. The coronary angiography done showed minor coronary artery disease. She had hemoglobin of 12.4 g/dL, TLC of 6.8/mm^3, platelets of 141/mm^3, serum potassium was 4.2 and serum sodium was 142. Urea and creatinine was normal and albumin was at 2.4 mg/dL. Thyroid functions were normal.

She had a past history of undergoing treatment for infertility and polycystic ovarian disease at the same outside hospital where she received Tab. Letrozole 2.5 mg from Day 3 to Day 6 of periods. She received Tab. Folic acid and Neurobion Forte. Her hysteroscopy and laparoscopy were done earlier, which did not reveal any obvious signs of endometriosis. Her histopathology examination of ovarian cyst wall showed benign cystic lesion lined by single layer of cuboidal cells.

Baby born was preterm by 3 months and newborn ECG didn't show any signs of complete heart block (FIG. 3). Long term regular follow up of the patient for next 1 year was uneventful with persistence of sinus rhythm. The infant was also healthy and free of any cardiac ailments.

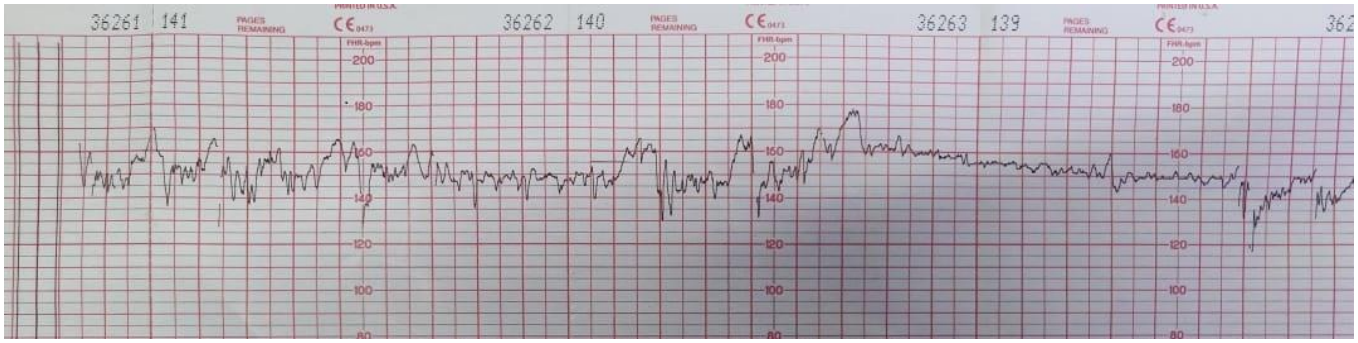

FIG 1. **1st Electrocardiogram of patient.**

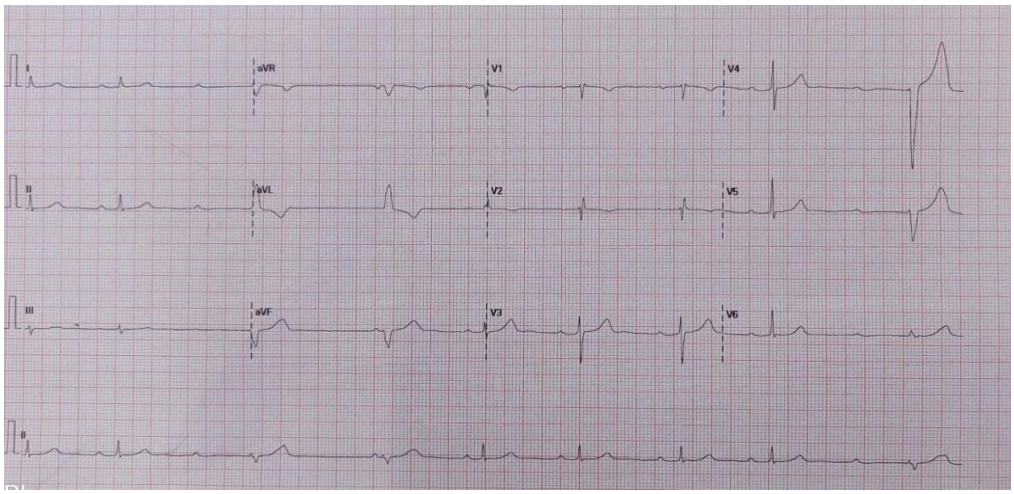

FIG 2. **2nd Electrocardiogram of patient.**

FIG. 3. **Baby's ECG.**

3. Discussion

The incidence of Congenital complete heart block (CHB) is rare with an estimate of 1 in 15,000 to 20,000 live births. It may be congenital or acquired. The acquired variety of Complete Heart Block is mostly seen after 50 years of age [5] and hence is also rare during pregnancy. In most of the studies, the pregnant women were asymptomatic during pregnancy except for Mandal et al [6] who reported a series of 21 pregnant women having complete heart block where 29% and 38% women had symptoms of syncope and palpitation respectively. In the same study complications as oligohydramnios (7%), preterm labor (11%) & IUGR (14 %) were noted. Suri et al also reported IUGR in two out of the four cases where preterm delivery by cesarean section were conducted, the possible reason being absent and reversed diastolic flow in placenta [7].

Management of women with Complete Heart Block (CHB) presenting without pacing, during pregnancy and labour is debatable. Temporary pacemakers are often routinely implanted before labour and birth as a prophylaxis to haemodynamic variations and adversities. Keepanasseril A et al took a different approach for the management of the condition. In their case,

a patient with complete heart block was managed without using temporary pacemaker. Hence temporary pacemakers may not be mandatory in such patients particularly in those without any underlying cardiac disorder, as it may not always lead to significant changes in the haemodynamic system. Tietge W et al described the case of a 29-year-old pregnant lady with unexplained high-degree AV block presenting with fatigue and had to be treated with a dual chamber permanent pacemaker. Further pregnancy and delivery were without complications [8,9].

Suri V et al presented four cases of AV block diagnosed during pregnancy and puerperium in northern India whose retrospective analysis of a 3-year period was carried out. Out of those four patients, only one had structural heart disease viz. corrected transposition of great arteries. Uneventful delivery was noted in all of them although two women were given prophylactic temporary pacing support during labour and three women required subsequent permanent pacemakers. Preterm labour occurred in one patient, whereas intrauterine growth restriction (IUGR) was present in two newborns, although none of them had any rhythm disturbances. A multidisciplinary approach ensures the best maternal and neonatal outcomes. Dhiman N et al reported a case of a 22-year-old second gravida having frequent fainting attacks (almost 2-3 episodes/day), palpitations and shortness of breath (New York Heart Association Functional Classification II) having pulse rate of 40 bpm at 28 weeks of gestation. ECG and Holter monitor confirmed complete heart block and a dual chamber permanent pacemaker were implanted. Subsequently the patient delivered a healthy child of 2.8 kg at 38 weeks. She remained asymptomatic for the rest period and was discharged in stable condition. Thus, symptomatic pregnant women should always be treated with a permanent pacemaker [9,10].

CHB carries a significant mortality (20%-30%, primarily foetal/ neonatal) and morbidity (67% require permanent pacing before adulthood). During pregnancy, the maternal autoantibodies can freely cross the placenta and bind to cardiomyocytes of the AV node or conduction system tissues causing inflammation, fibrosis and calcification that may lead to such congenital complete AV block. Life-threatening cardiomyopathy may also be present as a result of such inflammation in 10%-15% cases. Such patients may develop low birth weight, premature gestation, hydrops fetalis, endocardial fibroelastosis and diminished ventricular function which may lead to fatal outcomes. Patients who are diagnosed and treated in the neonatal period have a survival rate of 94% [11-13]. In early detected foetal heart block cases, the mother can be treated with dexamethasone 4 mg daily till the end of pregnancy. A review by Carolis et al. (2010) however showed that steroid treatment to mother can be beneficial only in first- and second-degree heart block but once foetal third-degree block develops, it becomes irreversible regardless of treatment [14].

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