

Brief Tale of Syncope in Peripartum Cardiomyopathy Unveiled as Complete Heart Block- Report of Two Cases with Review of Literature

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ABSTRACT

Incidence of Complete Heart block is rare during pregnancy and in most cases, it is first presentation of congenital complete heart block. Acquired cases of CHB may present in women with pre-existing conditions like congenital heart disease, cardiomyopathy, systemic lupus erythematosus or associated acute/ sub-acute condition like acute myocardial infarction, metabolic disturbances, drug intoxication or acute infection. Previous reported cases presented during pregnancy, while the two cases described here presented in puerperium after uneventful delivery. One of the cases required permanent pacemaker implantation while other was managed with temporary pacemaker support and discharged in stable condition after spontaneous reversion to normal sinus rhythm.

Keywords: Postpartum Period, Atrioventricular Block, Pacemaker

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INTRODUCTION

Conduction disorders of heart may occur during pregnancy and puerperium. It may be congenital as well as acquired. It may present first time during pregnancy or pregnancy itself can trigger conduction disorders in women with pre-existing conditions like congenital heart disease, systemic lupus erythematosus or associated conditions like acute myocardial infarction, metabolic disturbances, drug intoxication.[1][2] Third degree atrioventricular block and Type II second degree atrioventricular block is quite rare in comparison to sinus first degree atrioventricular block, type I second degree atrioventricular block and sinus bradycardia, usually presenting as syncope with or without hemodynamic compromise. Mostly these cases of complete heart block presenting during pregnancy or puerperium are congenital as we know thirty percent cases of congenital complete heart block presents in adulthood.[3][4] Acquired cases of complete heart block presenting during puerperium is unusual. In this article we are reporting two cases of conduction disorder in puerperium, one presenting with 2:1 atrioventricular block with intermittent complete heart block with repeated episodes of syncope with associated shortness of breath requiring permanent pacemaker implantation. The other case presented with complete heart block managed with temporary pacemaker implantation with spontaneous reversion to normal sinus rhythm.

CASE-1

A 35-year-old, female, five weeks post-partum with history of 4 term deliveries and no other significant medical history presented with complaints of shortness of breath, dizziness and repeated episodes of syncope of two weeks duration. At

presentation her vitals were: pulse-42/min, blood pressure-100/70 mmHg, temperature-98.1F and respiratory rate 22/min. crepitations were present in bilateral basal lung field. Rest physical examination was within normal limits. Patient's blood count and metabolic panels were within normal limit [Table 1]. HBsAg=Negative; Anti-HCV=non-reactive (NR); VDRL/RPR=non-reactive; HIV I & HIV II Ab=NR; Blood Group=A positive. Serial troponin-I was Negative (TnIA2=0.00ng/ml), but CK-MB was raised (CKMB=52U/L). Patient's thyroid stimulating hormone (TSH) was normal. ANA, Rheumatoid factor (RF) and Lyme's titer was negative. Patient chest x-ray was s/o hilar prominence. 2D-echocardiography showed dilated left ventricle (LV), Normal valve morphology, global LV hypokinesia, Moderate LV systolic dysfunction (EF=40%), diastolic dysfunction grade-II, Mild Mitral Regurgitation (MR), Mild Tricuspid Regurgitation (TR), normal pulmonary artery systolic pressure (PASP), No mass/no vegetation or pericardial effusion (PE) seen. Electrocardiogram (ECG) on presentation showed 2:1 AV block with intermittent complete heart block (CHB) [Figure 1A]. Coronary angiography was suggestive of normal coronaries. Temporary pacemaker implantation was done and left in situ for two weeks. However there was no reversion to spontaneous sinus rhythm and patient remained symptomatic with persistence of CHB so dual chamber pacemaker (DDDR) was implanted and patient was discharged in stable condition [Figure 1B]. At discharge ECG was showing ApVp (atrial paced ventricular paced) rhythm which changed to AsVs (atrial sensed ventricular sensed) rhythm over a period of 3 months.

Table 1: Blood Count and Metabolic panel

HAEMOGRAM		BIOCHEMISTRY	
Haemoglobin	12.5 gm %	UREA=17 mg/dl	TP=5.9 g/dl
Total Leucocyte count	7700	Creatinine=0.80mg/dl	ALB=3.0 gm/dl
Neutrophil	59 %	Mg=1.7 mg/dl	GLOB=2.9gm/dl
Lymphocyte	31 %	Na=143.1mmol/L	A/G=1.1
Monocyte	8 %	K=4.44 mmol/L	TBIL=0.5 mg/dl
Eosinophil	2 %	Cl=111.8 mmol/L	ALT=22U/L
Platelet	3,80,000	iCa=1.02 mmol/L	AST=37U/L
ESR	60 mm/1st Hour	Total Ca=1.99 mmol/L	ALP=164 U/L
		Glucose=84 mg/dl	
		CPK=44 U/L	CKMB=43 U/L
LIPID PROFILE			
Total Cholesterol =154mg/dl	HDL=52 mg/dl	LDL = 80mg/dl	Triglyceride= 102 mg/dl
THYROID PROFILE			
FT4= 0.9ng/dl	FT3=320pg/ml	TSH=3.9	
2D Echo: Dilated LV, Normal Valves, Global LV hypokinesia, Moderate LVSD (EF-40%), DD II, Mild MR, Mild TR, Normal PASP, No mass/Veg/PE			
ECG: intermittent 2:1 AV Block with complete heart block			

CASE-2

A 25-year-old, female presented with complaints of dizziness and five episodes of syncope for one week with history of first term delivery 4 weeks back and no other significant medical history. At presentation her vitals were: pulse-18/min, blood pressure-90/70 mmHg, temperature-98.6 F and respiratory rate 16/min. Rest of the systems were within normal limits. Patient blood count and metabolic panel were within normal limit [Table 2]. HbAg=Neg; Anti-HCV=NR; VDRL/RPR=NR; HIV I & II=NR; Blood

Group=B positive. Serial troponin-I was Negative (TnIA2=0.00ng/ml). Patient's TSH was normal. ANA, Rheumatoid factor (RF) and Lyme's titer were negative. Patient's chest x-ray was within normal limit. Patient 2D-echocardiography examination was within normal limit. Electrocardiogram (ECG) on presentation showed complete heart block (CHB) [Figure 1C]. Temporary pacemaker implantation (TPI) was done. After a week of TPI, patient's rhythm reverted spontaneously to normal sinus rhythm.

Table 2: Blood Count and Metabolic panel

HAEMOGRAM		BIOCHEMISTRY	
Haemoglobin	12.8 gm %	UREA= 51 mg/dl	TP=7.1 g/dl
Total Leucocyte count	12800	Creatinine=0.60mg/dl	ALB=4.2 gm/dl
Neutrophil	68 %	Mg=2.2 mg/dl	GLOB=2.9 gm/dl
Lymphocyte	21 %	Na=138mmol/L	A/G=1.50
Monocyte	10 %	K=3.99 mmol/L	TBIL=0.5 mg/dl
Eosinophil	1 %	Cl=112.5 mmol/L	ALT=36U/L
Platelet	2,10,000	iCa=1.18 mmol/L	AST=45 U/L
ESR	54 mm/1st Hour	Total Ca=2.11 mmol/L	ALP=124 U/L
		Glucose= 128 mg/dl	
		CPK=79 U/L	CKMB=35 U/L
LIPID PROFILE			
Total Cholesterol =175 mg/dl	HDL=40 mg/dl	LDL = 100mg/dl	Triglyceride= 145 mg/dl
THYROID PROFILE			
tT4= 12.88 ug/dl	tT3= 1.06 ng/ml	TSH= 1.547 uIU/mL	
2D Echo: within normal limits			
ECG: Complete heart block			

DISCUSSION

Conduction disturbances are seen in pregnancy. However, the finding of a high-degree AV block in pregnancy is rare. Complete heart block (CHB) being rare during pregnancy may be congenital or acquired. Mild sinus bradycardia may persist for few days postpartum without any need for

intervention. First degree & type I second degree AV block rarely progress to advance heart block, But Type II second degree AV block and complete heart block usually presents with symptoms requiring intervention in form of temporary or sometimes permanent pacemaker implantation (PPI). Pedro Covas et al in 2019 reported CHB with junctional

escape rhythm in 20-year-old female after 36 weeks of pregnancy, congenital CHB was diagnosed and dual chamber pacemaker was implanted.[5] In a study by Nakashima A et al in 2019, 63 pregnancies in 36 women (aged between 26 and 38 years) with congenital AV block were studied and they found that post-partum cardiac events occurred in 9 (14.3%) pregnancies and out of these only two required permanent pacemaker implantations (PPI).[6] Kirvak T et al in 2017 reported a case of 27-year-old who presented with type II second degree AV block for which temporary pacemaker was inserted to support the delivery and later dual chamber pacemaker was implanted.[7] Mandal S et al in 2015 in a prospective cohort study of 21 women (aged between 19 and 39 years) with CHB found that permanent pacemaker was done in 3 patients within one month and in 2 patients it was done after one month of delivery.[8] Suri V et al in 2009 reported about four patients with CHB (one with corrected Transposition of great arteries (TGA) and rest with normal echocardiography), two of these were given prophylactic temporary pacing before labor and three required subsequent permanent pacing.[3] In all above reported cases CHB was diagnosed before delivery but in this article both cases presented in puerperium. In case 1, QRS complex was narrow and no previous record was available as patient never had any symptom before, so congenital CHB was presumed. In view of recurrent syncope & moderate LV dysfunction dual chamber pacemaker was implanted. After one month of being discharged from the hospital, patient's normal rhythm recovered and diagnosis of acquired CHB was assumed in this case. In case 2, patient presented with heart rate of 18/min and QRS was wide with normal LV function, urgent temporary pacing was done at presentation. After a week of temporary pacemaker implantation patient's rhythm reverted spontaneously to sinus rhythm. Reason for acquired CHB in these cases is not clear, in one case it was associated with LV dysfunction while in other case LV function was normal. As myocarditis has been suggested as a possible reason for peripartum cardiomyopathy [9], same may be presumed in these cases as explanation for conduction disorder. Also, atrial stretch has been suggested as one of the explanations for acquired conduction disorders in pregnancy and recovery of progressive conduction disturbances during pregnancy has been reported in postpartum period.[10] ECG documentation should be mandatory during antenatal visit to help the diagnosis and decision making in these patients. The necessity of implanting a permanent pacemaker in these types of cases is difficult to establish as spontaneous reversal to sinus rhythm with improvement of symptom is also seen. However, correction of all reversible causes and close electrocardiographic monitoring is necessary. In our case, the first patient had repeated episode of syncope with associated shortness of breath with dizziness with 2:1 AV block and intermittent CHB which improved significantly after pacemaker implantation. The second case had repeated episodes of syncope requiring temporary pacing with CHB which reverted spontaneously to sinus rhythm with

simultaneous improvement in clinical symptoms and got discharged with conservative management. Acquired CHB is rare in puerperium but it's rare possibility should be kept as a possibility by obstetricians and physicians for timely diagnosis and management. Some of the patients may require permanent pacemaker due to persistence of symptoms as well as due to continuing rhythm abnormality and late recovery of normal sinus rhythm.

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CONFLICT OF INTEREST

None

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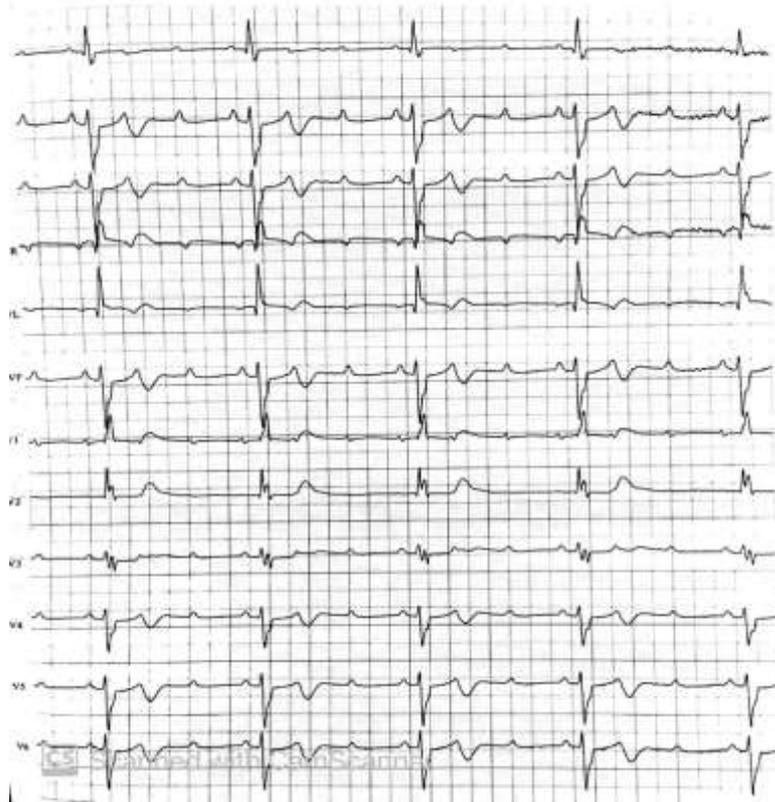


Figure 1A: ECG showing 2:1 block

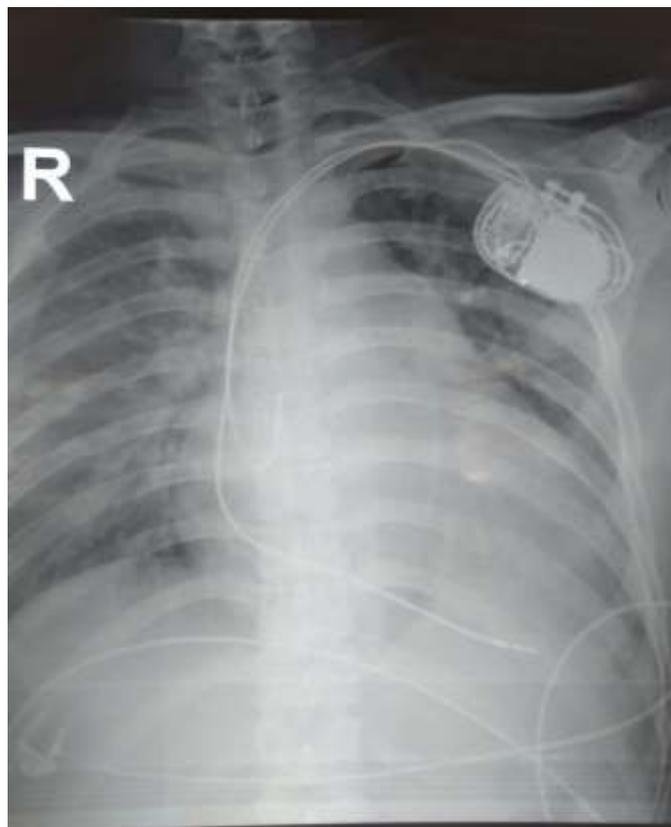


Figure 1B: CXR showing features of cardiomegaly with pacemaker (DDDR) in situ



Figure 1C: ECG showing complete heart block (CHB)