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Isolated Right Bundle Branch Block in Girl which Manifested as Excertional Chest Pain

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Abstract

Right bundle branch block (RBBB) occurs when transmission of the electrical impulse is delayed or not conducted along the right bundle branch in Right Ventricle. Thus, the right ventricle depolarizes by means of cell-to-cell conduction in myocytes that spreads from the interventricular septum and left ventricle to the right ventricle. This results in the characteristic electrocardiographic (ECG) pattern. The most common cause of right bundle branch block (RBBB) in children is Cardiac surgery associated with repair of an isolated ventricular septal defect (VSD) or another congenital heart disease that includes a VSD, for Example Atrioventricular [AV] canal, or tetralogy of Fallot. In this article, we investigate a case of unexplained bundle branch in a child who was complaining of chest pain.

Case Report

A 12 year old Girl referred with history of recurrent chest pain during physical activity ,The Electrocardiogram (ECG) was done and showed Normal sinus rhythm with RBBB Pattern with ST depression and T-wave inversion in V1-4 and lead III(Figure 1)

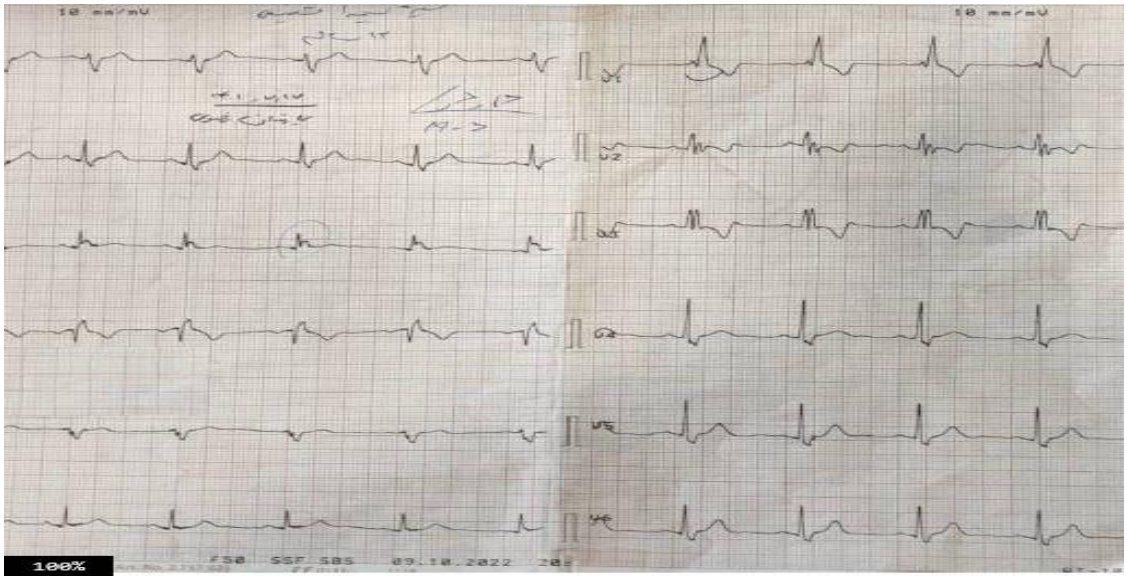

Figure 1: The figure shows 12 lead electrocardiograms RBBB Pattern with ST depression and T-wave inversion in V1-4 and lead III

lab Data there Showed no Significant Pathologic changes(WBC=6000/mcl, Neut=51.8%, lymph=41.1%) , (Platlet=237000/mcl),(Na=136 mEq /L), (Ca=8.8 mg/dl),(C RP=4.9 mg/dl) , (ESR=10mm/h).The Cardiac Enzyme were Normal(TPI=0.030). During hospitalization Chest pain was continues. For further investigation,CX-Ray was performed and Normal finding was observed (Figure 2).

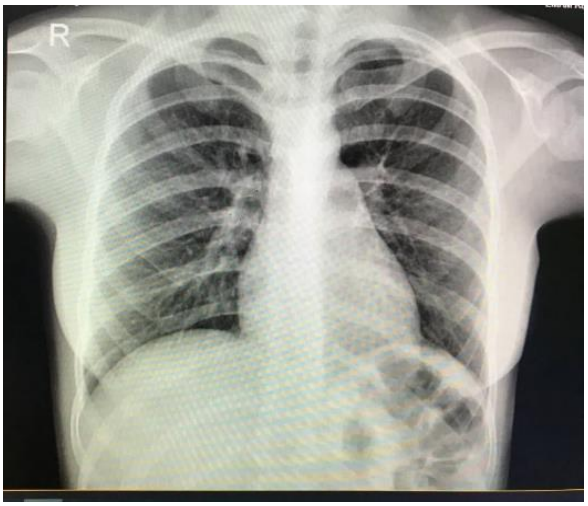

Figure 2: Chest X-Ray AP View showed Normal cardiothoracic ration(CTR)

Echocardiography was also done and showed Top normal RVOT Size(29mm),Normal heart function and , Normal coronary arteries without pericardial effusion any no any other Pathologic finding. For more evaluation Cardiac Exercise Stress Test (EST) was done; EST had no significant ST-T Changes (Max St Elevation 0.12Mv in II And Max St Depression -0.19Mv in V3) (Figure 3).

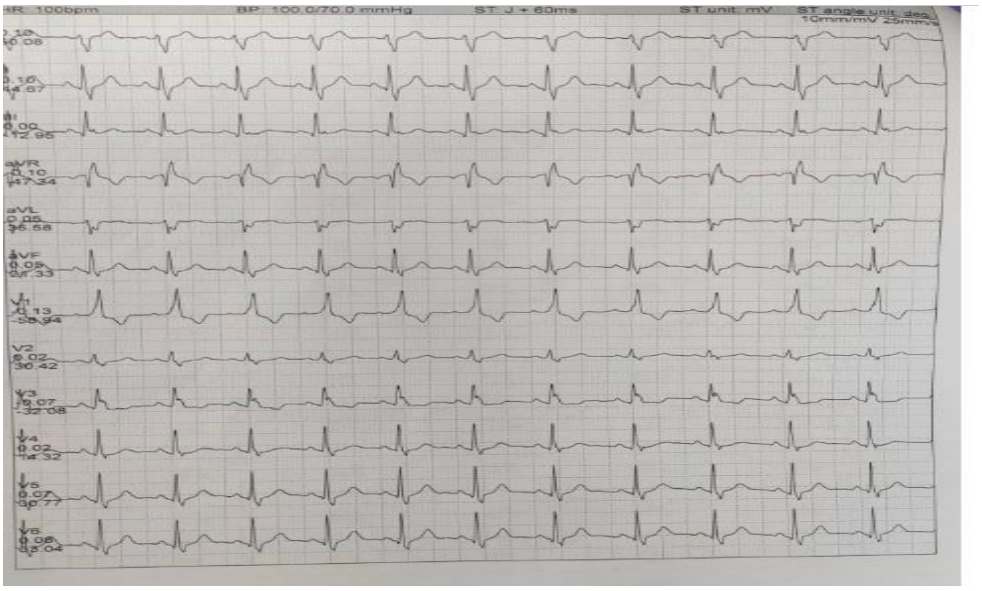

Figure 3: ECG 12 lead During the exercise test showed were not significant changes in St-t

Cardiovascular magnetic resonance imaging (CMR) was also done and showed;No LGE(No significant fibrosis),and normal heart Function and rejected cardial inflammatory Diseases, but highly suspected a coronary artery branch passing between AO and MPA .(Figure 4)

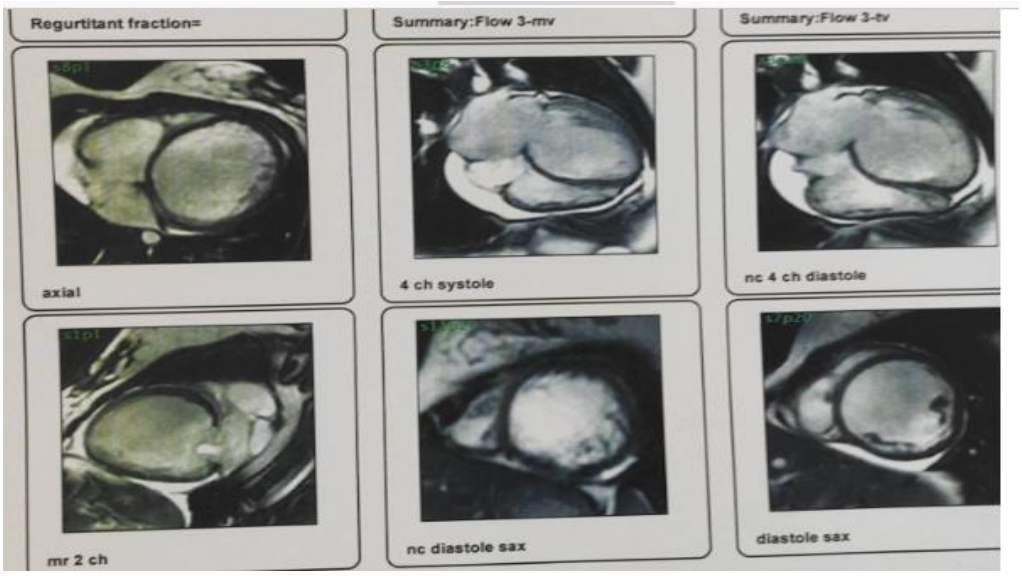

Figure 4: CMR showed normal heart but but highly suspected a coronary artery branch passing between AO and MPA

A computerized tomography (CT) coronary angiogram was performed for a more detailed examination of the coronary arteries, which did not report any coronary artery abnormalities

Discussion

Right bundle branch block (RBBB) is often seen in children after heart surgery, ECG Diagnostic criteria For RBBB Are: QRS duration > 120ms, RSR' pattern in V1-3 ("M-shaped" QRS complex), Wide and slurred S wave in lateral leads (I, AVL, V5-6),the Common Causes of Right Bundle Branch Block includes: Right ventricular hypertrophy , Corpulmonale , Pulmonary Embolus, Ischcemic heart disease, Rheumatic heart disease Congenital heart disease, Myocarditis, Cardiomyopathy, primary degenerative disease (fibrosis) of the conducting system. But none of our investigations found a cause for RBBB in this Patients. There is increasing literature suggesting that in the context of chest pain, a new RBBB is highly concerning for Ischcemic heart disease(IHD) But in thise case the Cardiac Enzyme were Normal and St-t changes were not Compatible With IHD. The right bundle branch is supplied by LAD perforators in most patient populations and thus occlusion of this branch may manifest as a new RBBB +/- LAFB. But our Patinets Had Normal CMR and Coronarey which rejects which rules out coronary heart disease Meanwhile, coronary artery occlusion is rare in children.

Complete right bundle-branch block is seen rarely in children and young adults. In a study on apparently healthy male subjects aged from 6 to over 50 years, showed that its prevalence in children is rare (1).6 reports on the familial occurrence of complete right bundle-branch block have been published. Of the 6 papers, 4 describe familial clustering of atrioventricular conduction disturbances and right bundle branch block(2).The two papers dealing with isolated right bundle branch block with no other conduction disturbance,the finding in three adult brothers, and in a mother,her three sons, and a grandson. All were diagnosed in adulthood(3). In this patient, none of the family members had any changes in the ECG. H L Graber report that during a 20-year period had seen 7 children with isolated right bundle-branch block among about 3000 cases with congenital heart disease. All seven havead catheterized and coexisting cardiovascular malformations have been excluded. Two of the cases were known to have relatives with complete right bundle branch block. These were a girl and her mother, and a boy and his father, We also did not find any findings of underlying disease in this patient despite thorough investigations.

Conclusion

Right bundle branch block in children may be Post cardiac surgery, congenital ,Familial and may occur in the absence of significant cardiac disease, And it may happen in isolation, but whether it can cause chest pain alone or not needs further investigation.

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