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Case report

COMPLETE ATRIO-VENTRICULAR BLOCK WITH ATRIO-VENTRICULAR AND VENTRI CULO-ARTERIAL DISCORDANCE IN ADULTS: ABOUT A CASE

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Abstract

Introduction

The double atrioventricular and ventriculoarterial discordance is characterized by an aberrant connection between a right atrium and a ventricle of left morphology, from which anterior ventricle emerges a dividing vessel: the pulmonary artery. From the left ventricle with right morphology emerges a large vessel not dividing, the aorta. It is a rare congenital heart disease that can be associated with disorders of atrioventricular conduction.

Case

It was a 45-year-old patient with no cardiovascular risk factors and no pathological history. He had a dyspnea of progressive worsening for two months initially at the usual efforts to then become a respiratory gene at the least effort. He did not report any notion of chest pain, dizziness or loss of consciousness. At admission, blood pressure was 150/60 mmHg with bradycardia at 40 beats / min, polypnea at 26 cycles / min and oxygen saturation at room air at 96%. The physical examination noted a right ventricular paraesternal heave and fine crackles at the pulmonary bases.

The EKG enrolled a complete atrioventricular block with narrow QRS complex and right atrial hypertrophy. Transthoracic ultrasonography showed atrioventricular and ventriculoarterial discordance with significant dilation of the left atrium and preserved biventricular systolic function.
A double chamber pacemaker implantation was performed. The ventricular lead was placed in the left ventricle instead of the right ventricle. We associated Spirinolactone and Ramipril in the treatement. The evolution was favorable with a considerable regression of the dyspnea two weeks after the pacemaker implantation.

Conclusion

Double atrioventricular and ventriculoarterial discordance is a rare congenital anomaly. It can induce disorders of atrioventricular conduction and compromise the functional and vital prognosis. Hence the need for implantation of a pacemaker.

Keywords: Atrioventricular and ventriculoarterial discordance, atrioventricular block, pacemaker

Introduction

The double discordance atrio-ventricular and ventriculo-arterial is characterized by an aberrant connection between a right atrium with a ventricle of left morphology, therefore not trabeculated, of this anterior ventricle comes out a vessel dividing: the pulmonary artery. From the left posterior ventricle of right morphology (trabeculated) emerges a large vessel not dividing: the aorta [1]. It is a rare congenital heart disease that can be associated with atrioventricular conduction disorders [2]. The objective of this case is to describe the clinical and therapeutic features of the complete atrioventricular block during the double discordance.

Case

This is a 45-year-old patient with no cardiovascular risk factors and no medical history. He had a progressive worsening dyspnea for two months, first at the usual efforts and then become a dyspnea at least efforts. He did not report any notion of chest pain, dizziness or loss of consciousness.

At admission in our unit, the general condition was good. The blood pressure was 150/60 mm Hg. There was bradycardia at 40 beats per minute, a superficial polypnea at 26 cycles per minute, and oxygen saturation in ambient air at 96%.

The physical examination found a right ventricular paraesternal heave and fine crackling rattles at the pulmonary bases. There was also cyanosis.

The EKG recorded an atrioventricular dissociation with narrow QRS com-

plex and biatrial hypertrophy.

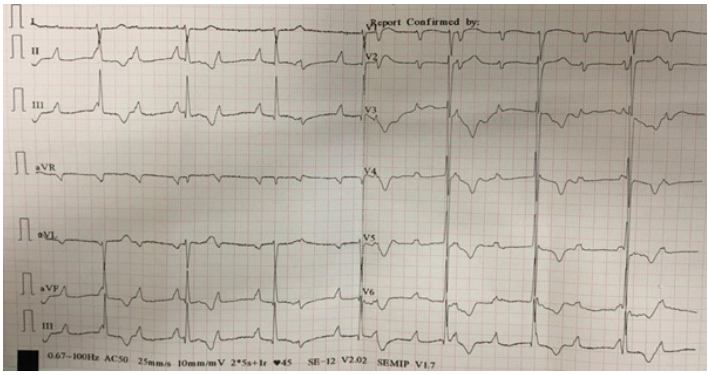

Figure 1. Surface ECG showing complete atrial ventricular block

The echocardiography showed atrioventricular and ventriculo-arterial discordance with a right atrium that communicates with a left ventricle morphology in the posterior position from which the pulmonary artery exits. The left atrium communicates through a tricuspid valve with a right morphology ventricle in the anterior position from which the aorta exits (Figure 2). There were no other associated malformations. The left atrium was dilatated with a volume of 30ml/m2. The biventricular systolic function was preserved.

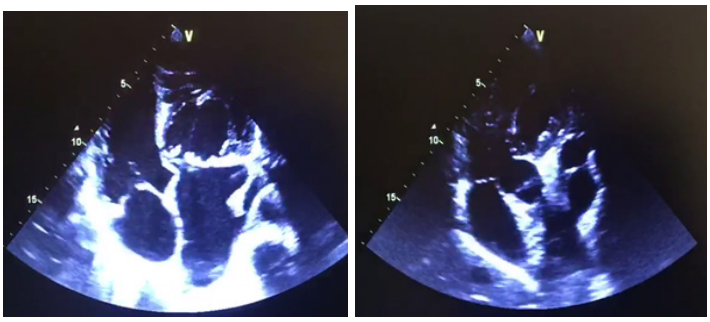

Figure 2. Transthoracic echocardiography apical 4 chambers (A) and 5 chambers (B) showing atrioventricular and ventriculo-arterial discordance.

In this context of complete auriculo-ventricular block symptomatic with adult congenital heart disease, the implantation of pacemaker double chamber was performed (Figures 3). The ventricular lead was placed in the left ventricle instead of the right ventricle after catheterization of the cephalic vein. We associated Spirinolactone and Ramipril in the treatement. The evolution was favorable with a considerable regression of the dyspnea two weeks after the pacemaker implantation.

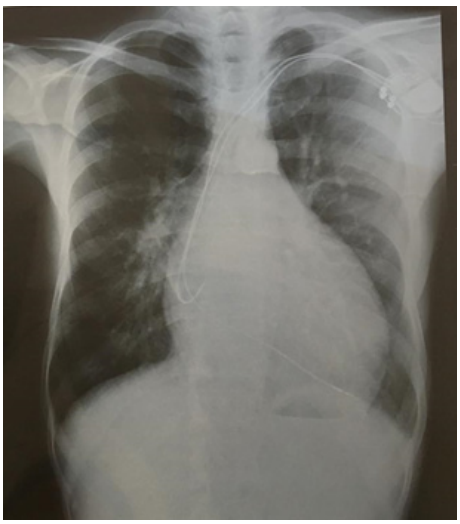

Figure 3. Thorax chest ray after pacemaker implantation

Discussion

Atrioventricular discordance is a rare congenital abnormality with an incidence of 1/33,000 live births, representing approximately 0.05% of congenital heart defects [3]. A the pathophysiological contrary to the transposition of large vessels, the ventriculo-arterial discordance is corrected by the auriculo-ventricular discordance. Indeed, venous blood from the right atrium goes to the pulmonary artery via the left ventricle and oxygenated blood, via the left atrium, goes to the ventricle must then evacuated by the aorta [4].

It can cause conduction disorders. About one-tenth of infants born with dual discordance have complete atrial ventricular block [5,6]. In patients born with normal atrioventricular conduction, the risk of passing through complete atrial ventricular block over time is 2% per year and can reach 10-15% in adolescence or even 30% in adulthood [7]. The origin of atrioventricular conduction disorders is related to the malposition of the atrioventricular node on the axis of the conduction tissue.
Gradually over time, the PR interval extends until the conduction blockage is complete and becomes symptomatic. [8].

In our case, the major symptom was dyspnea. This respiratory gene could be explained in part by the poor tolerance of the conductive disorder also by the dysfunction of the systemic right ventricle. Indeed, several multicentre studies have shown an increasing incidence of heart failure with age [9,10]. After 45 years old, half of patients with associated lesions and one third of subjects without significant associated lesions will develop systemic right ventricle dysfunction. This dysfunction is also related to volume overload due to atrioventricular valve regurgitation or abnormal myocardial perfusion, during adolescence and adulthood.

Echocardiography has an important diagnostic role in the diagnosis of this condition, making it possible to determine the existence of associated malformations and to indicate the specific relationships between the different segments of the heart.

The therapeutic intake focuses on the management of the failing systemic right ventricle and the severity of associated malformations. It is a treatment with diuretics and inhibitors of the angiotensin converting enzyme. In case of atrioventricular conduction abnormalities such as the case of our patient, the implantation of a pacemaker is necessary especially when the latter is symptomatic [11]. The peculiarity of this stimulation lies in the fact that the ventricular probe is placed in the left ventricle instead of the right ventricle.

Our patient's short-term prognosis was good. But usually in the long run, volume overload of the systemic right ventricle will set in, leading to progressive heart failure as soon as hemodynamic stresses become significant.

Conclusion

The double atrioventricular and ventriculoarterial discordance is a rare congenital abnormality. It can induce atrioventricular conduction disorders and involve the functional and vital prognosis. Hence the need to implant a pacemaker.

Références

1. Wallis GA, Debich-Spicer D, Anderson RH. (2011) Congenitally corrected transposition. Orphanet J Rare Dis. 6: 22.
2. Mah K, Friedberg MK. (2014) Congenitally corrected transposition of the great arteries: situs solitus or inversus. Circ Cardiovasc Imaging. 7: 849–851.
3. Van der Linde D, Konings EEM, Slager MA et al. (2011) Birth prevalence of congenital heart disease worldwide: a systematic review and meta-analysis. J Am Coll Cardiol. 58: 2241–2247.
4. Malecka B, Bednarek J, Tomkiewicz-Pajak L et al. (2010) Resynchronization therapy transvenous approach in dextrocardia and congenitally corrected transposition of great arteries. Cardiol J. 17: 503-8
5. Sharland G, Tingay R, Jones A et al. (2005) Atrioventricular and ventriculoar- terial discordance (congenitally corrected transposition of

the great arteries): echocardiographic features, associations, and outcome in 34 fetuses. Heart. 91: 1453–1458.
6. Friedberg DZ, Nadas AS. (1970) Clinical profile of patients with congenitally corrected transposition of the great arteries. A study of 16 cases. N Engl J Med. 282: 1053.
7. Yeo WT, Jarman JWE, Li W et al. (2014) Adverse impact of chronic subpulmonary left ventricular pacing on systemic right ventricular function in patients with congenitally corrected transposition of the great arteries. Int J Cardiol. 171: 184–191.
8. Rutledge JM, Nihill MR, Fraser CD et al. (2002) Outcome of 121 patients with congenitally corrected transposition of the great arteries. Pediatr Cardiol. 23: 137–145.
9. Dimas AP, Moodie DS, Sterba R et al. (1989) Long-term function of the morphological right ventricle in adult patients with congenitally corrected transposition of the great arteries. Am Heart J. 118: 896.
10. Hofferberth SC, Alexander ME, Mah DY et al. (2016) Impact of pacing on systemic ventricular function in L- transposition of the great arteries. J Thorac Cardiovasc Surg. 151: 131– 138.
11. Dyer G. (2003) Congenitally Corrected Transposition of the Great Arteries: Current Treatment Options. Curr Treat Options Cardiovasc Med. 5: 399-407.

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