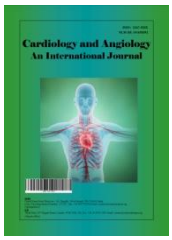

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Diastolic Valvular Regurgitation in Patient with Complete Atrio-ventricular Block

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Mitral regurgitation in conduction disorders is a rare feature of functional valve regurgitation.
In patients with high-grade atrioventricular block, the onset of ventricular ejection may shift with atrial telesystole; in this case, the rise in left ventricular filling pressure after atrial systole, especially in the case of complete atrioventricular block leading to an inversion of the LA-LV gradient during the supraventricular relaxation phase and diastolic mitral insufficiency can gradually set in , as well as secondary tricuspid regurgitation
Here we report the observation of a patient admitted for a complete atrioventricular block, with reversible mitral and tricuspid regurgitation after implantation of a pace maker.

Keywords: complete atrio-ventiuclar block , diastolic regurgitation , valvular heart disease.

1. INTRODUCTION

Diastolic valve regurgitation is a rarely described functional entity, often affecting the mitral valve, often poorly diagnosed in the context of severe conductive findings.

Usually regressive after curative treatment of the cause.We report the case of mitral and tricuspid regurgitation occurring in the context of complete atrioventricular block, through the case we explain the mechanism of this entity.

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2. CASE REPORT

We report the case of an 84-y.o woman, , with a history of hypertension treated by angiotensin receptor blockers ,presented to emergency with progressive fatigue and dizziness , gradually installed for a week, without syncopal episode, faintness or chest pain ; On physical examination at admission , her arterial pressure was 130 /76 mmHg , the heart-ratewas 30 bpm , with systolic murmur on xiphoid process and cardiac apex the biological assessment carried out on admission was normal ; Her ECG showed a complete atrio-ventricular block with ventricular escape rhythm at 30 bpm.

On admission to cardiology intensive care unit , transthoracic echocardiogram revealed : Left ventricle with minimal hypertrophy, good global and segmental contractility, EF = 55 % , mild left atrial dilatation ; color mode objectify a mild to moderate valvular insufficiency at the level of the mitral and tricusipid valves with low velocity ;Continuous mode confirmed the diastolic type of the regurgitation . (Fig. 1) the implantation of a dual-chamber pacemaker (Medtronic) was recommended, performed on the patient 24 hours after admission, the postoperative electrocardiogram showed a regular electrostimulated rhythm (Fig. 2).

The evolution was marked on the control echocardiography carried out 2 weeks later by the regression of the valvular regurgitation. (Fig. 2).

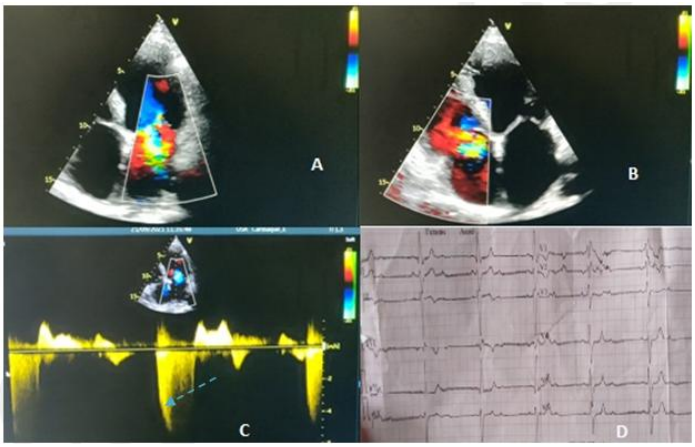

Fig. 1. Initial transthoracic echocardiography : (A-B) color mode objectify mitral and tricuspid regurgitation , (C) continuous mode : systole-diastolic regurgitation (D)Initial Electrocardiogram showed complete atrioventricular block

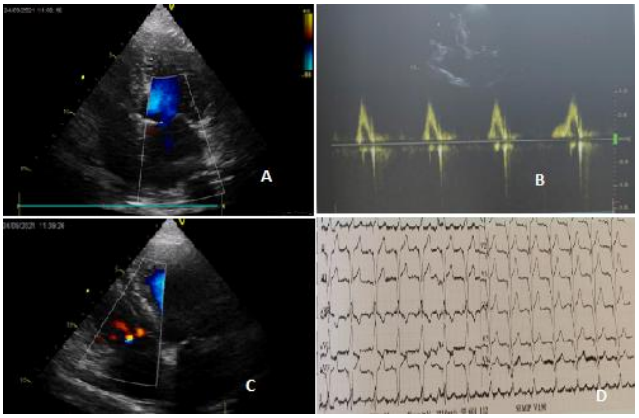

Fig. 2. (A-B-C) regression of valvular regurgitation on color doppler and continuous mode in echocardiography of control (D)post implantation of dual chamber pacemaker electrocardiogram

3. DISCUSSION

Atrioventricular conduction abnormalities represent a rare but well-known entity of valvular insufficiency, especially diastolic. The other etiologies described are essentially represented by acute aortic insufficiency following endocarditis, or restrictive pathologies

The diastolic entity of mitral regurgitation is part of the pathological functional mechanisms, it is often associated with tricuspid involvement; its atypical diastolic character makes it often ignored on echocardiographic examination, which can easily confuse it with a systolic regurgitant mechanism.

On the clinical level, the diastolic character of the valvular insufficiency could be suspected by a diastolic murmur on auscultation often present. The first mechanisms were described by Schnittger et al [1]: The murmur is often marked by cardiac output through the atrioventricular valves.

A synchronous and effective closure of the atrioventricular valves is not obtained because of the atrioventricular block, before the ventricular ejection, this is observed during the echocardiographic evaluation especially in TM-color mode.

The essential conditions are represented by the hemodynamic inversion of the gradient between the atria and the ventricles during diastole, as well as the defect of closure of the mitral valve, a condition present in various pathologies where the gradient is reversed [2].

The optimal conditions for having an effective valvular closure is obtaining a good synchronous ventricular contraction, preserving the pressure hemodynamics.

In the case of complete atrioventricular block, the pressure curves show an end-diastolic pressure in the left ventricle higher than that at the atrial level, resulting in diastolic insufficiency through the poorly closed atrioventricular valves [3,4].

At the level of the literature, similar cases have been observed [5,6],ranging from a level of atrioventricular block M2/1 to the complete stage.Mitral involvement is often the most described, sometimes associated with respiratory symptoms.The isolated tricusipd attack seems extremely rare, often associated with mitral attack.Stimulation and implantation of a dual-chamber pacemaker allows in the majority of cases to regain good hemodynamics with regression of valvular regurgitation .Imaging by echocardiography by its different modes represents the most used tool to screen and follow the evolution after treatment.

4. CONCLUSION

Valvular insufficiency during conduction disorders, especially in cases of complete atrioventricular block, is an entity that is often underestimated, its diastolic duration brings more specificity, as does the state of the valves, the reversible character is to be confirmed after implantation pacemaker.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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