



High Degree Atrioventricular Block and Syncope in the Tetralogy of Fallot (TOF)

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Abstract

Introduction: TOF is the most frequent congenital cyanogen cardiopathy. Sudden death is the most frequent adverse event after surgical treatment, mostly due to Serious Ventricular Rhythm Trouble. High degree atrioventricular block is rare cause of syncope or sudden death especially late after complete correction.

Case Presentation: We describe here the case of a 49 years old patient suffering of a regular TOF operated at the age of six followed by a total atrioventricular block during post-operative period, which quickly and spontaneously self-resolved, and which presented recently severe syncope. There is no argument for extra cardiac explanation. EKG found total right bundle-branch block, left axis and an anterior left bundle-branch half-block. The echocardiography found a TOF corrected with good results (normal volume of the right cavities and a minor pulmonary leakage). The programmed ventricular stimulation was negative and electrophysiological study founding a long HV delay leading to an implantation of pacemaker.

Discussion: The HDAB diagnosis in these situations is not that easy from an epidemiological point of view and pathophysiology, but it may help avoid the excessive implantation of automatic implantable defibrillator. A good correction result, trans-annular patch absence and the EKG aspect should evoke this diagnostic.

Keywords: Syncope; Fallot; Total atrioventricular block; Late; Pacemaker

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Introduction

TOF is the most frequent congenital cyanogen cardiopathy. Sudden death is one of most frequent adverse event after surgical treatment, mostly due to Serious Ventricular Rhythm Trouble (SVRT) [1,2]. Nonetheless, High Degree atrioventricular blocks (HDAB) are a rare cause of sudden death within those patients, especially when the times from total surgical treatment increase [3]. SVRT are caused by a dilatation of the right cavities and by myocardic scars (trans-annular patch, ventriculotomy) [4]. HDAB are caused by lesions of the conduction tissue. We describe here the case of a patient suffering of a TOF which presented severe syncope due to a HDAB, confirmed by electrophysiological study.

Case Presentation

A 49 years old patient consults at the emergency department following multiple faintness with syncope during both rest and effort time. The most interesting point of his medical past history is a regular TOF operated at the age of six followed by a total atrioventricular block during post-operative time which quickly and spontaneously self-resolved. There was no case of sudden death in the relative. The patient wasn't taking any medication. The clinical examination was normal, no argument for neurological explanations of that syncope was found. The interrogation of the patient found several arguments for a cardiogenic explanation.

Paraclinic

EKG found a sinus rhythm, normal PR, total right bundle-branch block (160ms), left axis and an anterior left bundle-branch half-block (Figure 1). An echocardiography was performed and found a TOF corrected with good results, normal volume of the right cavities and a minor pulmonary leakage. The patient benefited from a multisite programmed ventricular stimulation

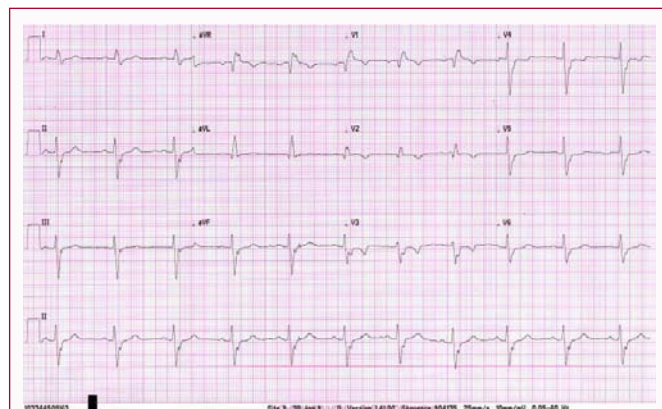


Figure 1: EKG with normal PR, right bundle-branch block, left axis, anterior left bundle-branch-half- block.

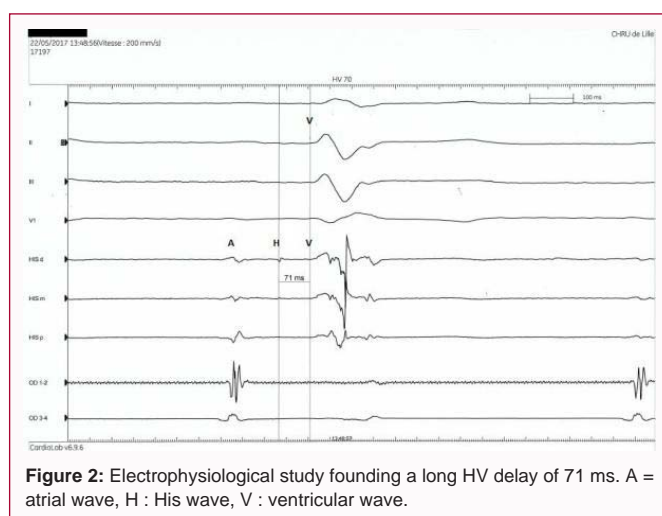


Figure 2: Electrophysiological study founding a long HV delay of 71 ms. A = atrial wave, H : His wave, V : ventricular wave.

(PVS), negative and from an electrophysiological study founding a long HV delay of 71 ms (Figure 2). Leading to an implantation of a dual chamber pacemaker (43 years after repair). No recurrence of the syncope occurred.

Discussion

By frequency argument, syncope in long-term operated TOF is caused by SVRT [5], requiring an implantable automatic defibrillator

(AID) or radiofrequency ablation. In selected patients, SVRT occur through a re-entry mechanism around scars [6,7] induced by surgery and / or dilatation of right cavities.

Making the HDAB hypothesis in these situations is not that easy from an epidemiological point of view and pathophysiology, but it may help avoid the excessive implantation of AID. The lack of expansion of right cavities, trans-annular patch absence and the EKG aspect should evoke this mechanism on a classic right branch block associated with a left heart axis while it is generally a right axis in the TOF, or if it is associated with a first degree atrioventricular block.

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