Permanent atrioventricular block after flecainide testing

Bloqueo auriculoventricular permanente tras test de flecainida

To the Editor,

Pharmacological challenge tests with sodium channel blockers (SCBs) may have unexpected diagnostic applications in syncope with diagnostic uncertainty.

We present the case of a 72-year-old woman who attended the emergency room after syncope of cardiogenic origin (which occurred while the patient was sitting, with no warning signs, and with complete recovery). The only personal history of note was that her son had died suddenly of unknown causes and there had been no autopsy. The initial workup, including echocardiography, showed no abnormal findings except the presence in the ECG of a QRS interval of 100 ms with a type 3 Brugada pattern (figure 1) and no significant changes in the high leads.

Given the patient's family history, a pharmacological challenge test was undertaken to rule out Brugada syndrome (flecainide 2 mg/kg for 10 minutes). During the procedure, no changes were observed in the ST segment in V_1 or V_2. However, without any prior QRS widening, the patient developed atrioventricular block (AVB), initially second degree but which progressed to complete block (figure 1B). Flecainide perfusion was suspended and a tetrapolar catheter was introduced into the right ventricle via right femoral puncture. This catheter could record His bundle activity and confirmed that AVB was infranodal (figure 2A). Given that complete AVB persisted, the catheter was left at the apex of the right ventricle to provide pacing as a temporary pacemaker. The patient was transferred to the coronary unit. After more than 24 hours of monitoring, the complete AVB did not resolve and so a permanent pacemaker was implanted. At 3 years' follow-up, the patient was asymptomatic (with no recurrences of syncope) and still required pacing from the pacemaker, as complete AVB persisted (figure 2B).

Pharmacological challenge tests with SCBs (normally ajmaline or flecainide, and occasionally procainamide) are usually used to unmask the electrocardiographic pattern of type 1 Brugada syndrome in undiagnosed cases (syncope of diagnostic uncertainty, family screening).[1,2] SCBs are also recommended by the clinical practice guidelines for cases of syncope with bifascicular block and HV interval < 70 ms, with the aim of uncovering disorders in the His-Purkinje system.[1] Traditionally, procainamide or, less frequently, ajmaline, is recommended.[1,3,4] However, a recent study has shown that flecainide could be more sensitive than procainamide for uncovering His-Purkinaje involvement in these patients.[5] Pacemaker placement is indicated if, after administra-

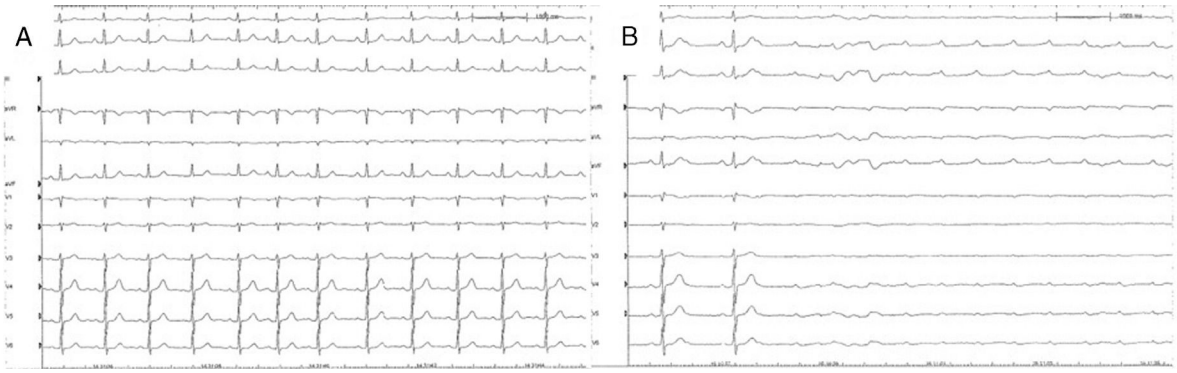

Figure 1. A, Basal electrocardiogram with QRS 100 ms and type 3 Brugada pattern. B, Complete atrioventricular block without prior QRS widening.

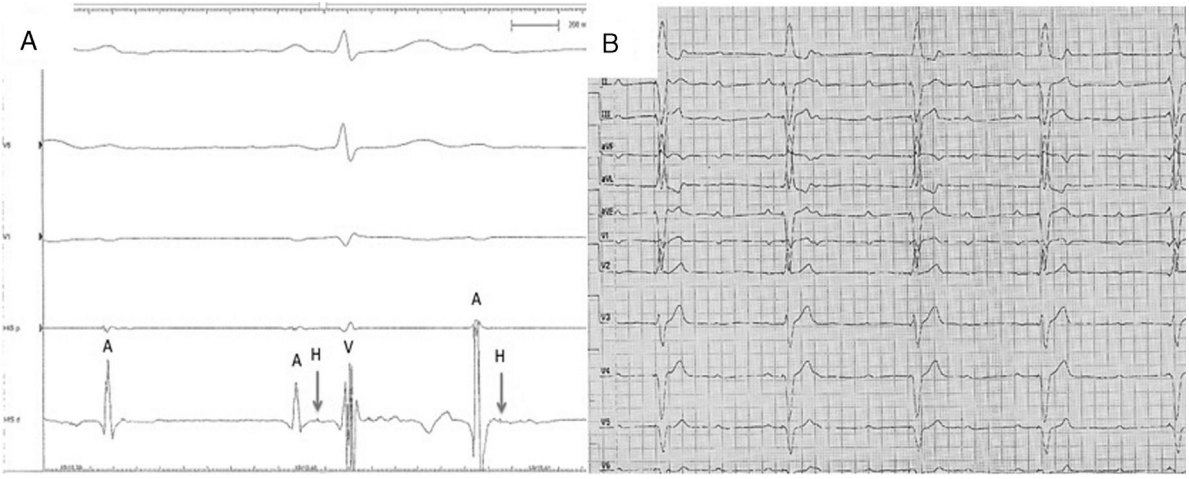

Figure 2. A, Electrophysiological study showing intra-Hisian atrioventricular block with atrial (A), Hisian (H), and ventricular (V) electrograms. B, Electrocardiogram 2 years after the episode, with complete atrioventricular block and pacemaker dependence.

tion of SCBs, HV prolongation is > 100 ms or if second or third degree infranodal AVB occurs,[3,5] as was the case in our patient.

It has been demonstrated that SCBs can be safely used in pharmacological challenge tests, although they might trigger ventricular arrhythmias or transient AVB, particularly in patients with prior atrioventricular or intraventricular conduction abnormalities.[5,6] To prevent the onset of AVB, most authors recommend terminating pharmacological challenge when QRS widening > 30% is observed.[6] To date, the conduction abnormalities described resulting from use of group Ic antiarrhythmic agents (flecainide, propafenone) have been transient, with a maximum duration in line with the half-life of the drug (≈ 6 hours in the case of flecainide, but possibly as long as 58 hours in patients with chronic kidney disease).

In the case presented here, it is notable that AVB occurred during the flecainide test with no prior QRS widening despite being infranodal (indicating that AVB in this case was probably intra-Hisian). Also of note is that AVB was permanent and not transient, as reported in previous literature, with the need for a permanent pacemaker.

In short, we believe that flecainide unmasked a disorder in the His-Purkinje system as the cause of the syncope. This case, therefore, highlights the question of whether a pharmacological challenge test with SCBs should be performed in cases of syncope of unknown cause with prolonged QRS but < 120 ms (incomplete block of the left or right branch, hemiblocks) to uncover abnormalities of His-Purkinaje conduction as the cause of syncope.

Raquel Luna-López, Tomás Datino,* María Ángeles Espinosa, Francisco Fernández-Avilés, and Ángel Arenal

Servicio de Cardiología, Hospital General Universitario Gregorio Marañón, Instituto de Investigación Sanitaria del Hospital General Universitario Gregorio Marañón, CIBERCV, Universidad Complutense de Madrid, Madrid, Spain

*Corresponding author:
E-mail address: tomas.datino@gmail.com (T. Datino).

Available online 17 October 2019

REFERENCES

1. Brignole M, Moya A, de Lange FJ, et al. 2018 ESC Guidelines for the diagnosis and management of syncope. *Eur Heart J.* 2018;39:1883–1948.
2. Somani R, Krahn AD, Healey JS, et al. Procainamide infusion in the evaluation of unexplained cardiac arrest: From the Cardiac Arrest Survivors with Preserved Ejection Fraction Registry (CASPER). *Heart Rhythm.* 2014;11:1047–1054.
3. Tonkin AM, Heddle WF, Tornos P. Procainamide administration during electrophysiology study-utility as a provocative test for intermittent atrioventricular block. *Aust N Z J Med.* 1978;8:594–602.
4. Martí-Almor J, Cladellas M, Bazán V, et al. Nuevos predictores de evolución a bloqueo auriculoventricular en pacientes con bloqueo bifascicular. *Rev Esp Cardiol.* 2010;63:400–408.
5. Roca-Luque I, Francisco-Pasqual J, Oristrell G, et al. Flecainide versus procainamide in electrophysiological study in patients with syncope and wide QRS duration. *JACC Clin Electrophysiol.* 2019;5:212–219.
6. Rolf S, Bruns HJ, Wichter T, et al. The ajmaline challenge in Brugada syndrome: Diagnostic impact, safety, and recommended protocol. *Eur Heart J.* 2003;24:1104–1112.

https://doi.org/10.1016/j.rec.2019.06.016
1885-5857/

Sheathless transaxillary transcatheter aortic valve implantation using the Portico valve system. Initial experience of a real-world "Heart Team"

Implante sin introductor de válvula Portico por acceso transaxilar. Experiencia inicial de un «equipo multidisciplinario» real

Transcatheter aortic valve implantation (TAVI) is indicated in patients with severe aortic stenosis with an intermediate or high surgical risk or who are deemed inoperable.[1,2] Transfemoral access is the most common route, but is not always possible if the patient has peripheral vascular disease. Alternative routes have been proposed, not always with good associated outcomes.[3] With transaxillary access, there is a shorter distance from the puncture of the aortic annulus, which potentially enhances control during implantation. The left axillary artery is used more often because it allows better coaxial alignment of the device and the aortic annulus, but it is more fragile than the common femoral artery and is noncompressible. The possibility of performing TAVI with a highly-flexible valve that can be advanced in tortuous arteries, such as the Portico (Abbott Vascular; Santa Clara, California, USA), with a sheathless introduction[4] and therefore reduced diameter, could reduce vascular complications and allow its use in smaller arteries.

The clinical guidelines[1] advocate a multidisciplinary Heart Team, although in reality the roles of the cardiac surgeon (CS) and interventional cardiologist (IC) vary, depending on the hospital.

The aim of our study was to describe our experience with the Portico self-expanding valve implanted using a sheathless technique via a transaxillary route, in which both the CS and the IC actively participated in decision-making before and during implantation.

We carried out a retrospective study with clinical follow-up. The primary objectives were the success of the intervention and the complication rate.

The study was conducted between March 2017 and December 2018. It included 29 patients with severe aortic stenosis who were being considered for TAVI but who had inadequate transfemoral access due to vessel diameter < 6-6.5 mm, calcification, or severe tortuosity, but feasible transaxillary access (vessel diameter > 5 mm, absence of calcification and arterial tortuosity and an angle between the subclavian artery and the aorta of ≥ 60°). The procedure was conducted in a fully equipped operating room with 2 CSs and 2 ICs present. Under general anesthetic, a 4-6 cm incision was made below and parallel to the left clavicle. The pectoralis major was dissected in the direction of its fibers, the clavipectoral fascia was opened and the pectoralis minor was exposed and retracted laterally. Taking special care of the brachial plexus, surgical cut-down exposed the axillary artery (figure 1A), which was sutured with a purse-string suture (figure 1B). The artery was