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Clinical case

Poorly tolerated fine QRS reciprocal orthodromic tachycardia by hidden accessory pathway in adolescents: a case report

Tachycardie orthodromique réciproque à QRS fins par voie accessoire cachée mal tolérée de l'adolescent à propos d'un cas

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Résumé

Les troubles du rythme cardiaque mal tolérés chez l'adolescent constituent une véritable urgence cardiovasculaire nécessitant une prise en charge rapide, immédiate et adaptée. Nous rapportons le cas d'un adolescent de 18 ans présentant une tachycardie orthodromique avec choc nécessitant une cardioversion électrique.

Mots-clés : tachycardie orthodromique, trace cachée, adolescent, Tchad.

Abstract

Poorly tolerated cardiac rhythm disorders in adolescents are a true cardiovascular emergency requiring rapid, immediate and appropriate management. We report the case of an 18-year-old adolescent presenting with orthodromic tachycardia with shock requiring electrical cardioversion.

Keywords: orthodromic tachycardia, hidden pathway, adolescent, Chad.

Introduction

Poorly tolerated cardiac rhythm disorders in adolescents are a diagnostic and therapeutic emergency. We report a case of regular reciprocal tachycardia on probable hidden accessory pathway in an 18-year-old adolescent.

Clinical case

This was a young 18-year-old patient referred to the gastroenterology department on suspicion of a rhythm disorder. Symptoms began 5 hours before admission, with sudden onset of palpitations associated with vomiting, which led to consultation of the gastroenterology department. He reports one or two episodes of palpitations every three months for the past two years, with a similar character and abrupt onset and cessation. There is no family history of sudden death.

He had polypnoea with a respiratory rate of 35 cycles/

minute and an SpO2 on room air of 90%. Regular tachycardia at 280 beats/minute. Temperature was 36.6°C, arterial pressure 83/65 mm Hg with profuse sweating. Mucous membranes were normocolored with no cyanosis. Consciousness was clear. He had a normal body mass index of 19.7 kg/m², a weight of 55.7 kg and a height of 175 cm. Examination revealed signs of struggle, free lungs, regular tachycardia without murmurs and no signs of phlebitis. Peripheral pulses were thready and symmetrical.

Biologically, we noted a normal blood ionogram (K+ : 4.6 mEq/l Na+ : 144 mEq/l Cl- : 108 mEq/l Ca2+ : 100 mg/l Mg2+ : 28 mg/l), blood glucose: 0.97g/L, normal renal function with urea at 0.48 g/l and creatinemia at 12mg/l. Transaminases were also normal (ALAT: 7.8 IU/l ASAT: 13 IU/l). The 12-lead electrocardiogram (ECG) on admission showed regular fine-QRS tachycardia at 234 beats per minute, with a retrograde P' wave visible in leads V6 (figure 1). Vagal manoeuvres using carotid massage and eyeball compression were negative. Echocardiography (TTE) revealed a non-dilated, non-hypertrophic, hyperkinetic left ventricle with preserved EF and no mitro-aortic valve disease. Right cavities of normal size and good function. Dry pericardium.

We retained the diagnosis of poorly tolerated fine-QRS supraventricular tachycardia (possibly orthodromic) in acute circulatory shock.

Oxygen therapy at 4 l/min, a loading dose of per os amiodarone followed within minutes by an external electric shock (EEC) at 150 joules enabled a return to sinus rhythm at 99 beats per minute with a short PR interval at 86 ms with fine QRS (figure 2 ECG 2), reinforcing the hypothesis of orthodromic tachycardia on a hidden accessory pathway. The course was marked by a marked improvement in dyspnea, complete cessation of vomiting and normalization of systolic blood pressure to 125 mm Hg. At D1 post CEE, the PR interval was normal at 122 ms (figure 2 ECG 3). ECG and ETT at D15 were unremarkable on bisoprolol 2.5 mg one tablet in the morning.

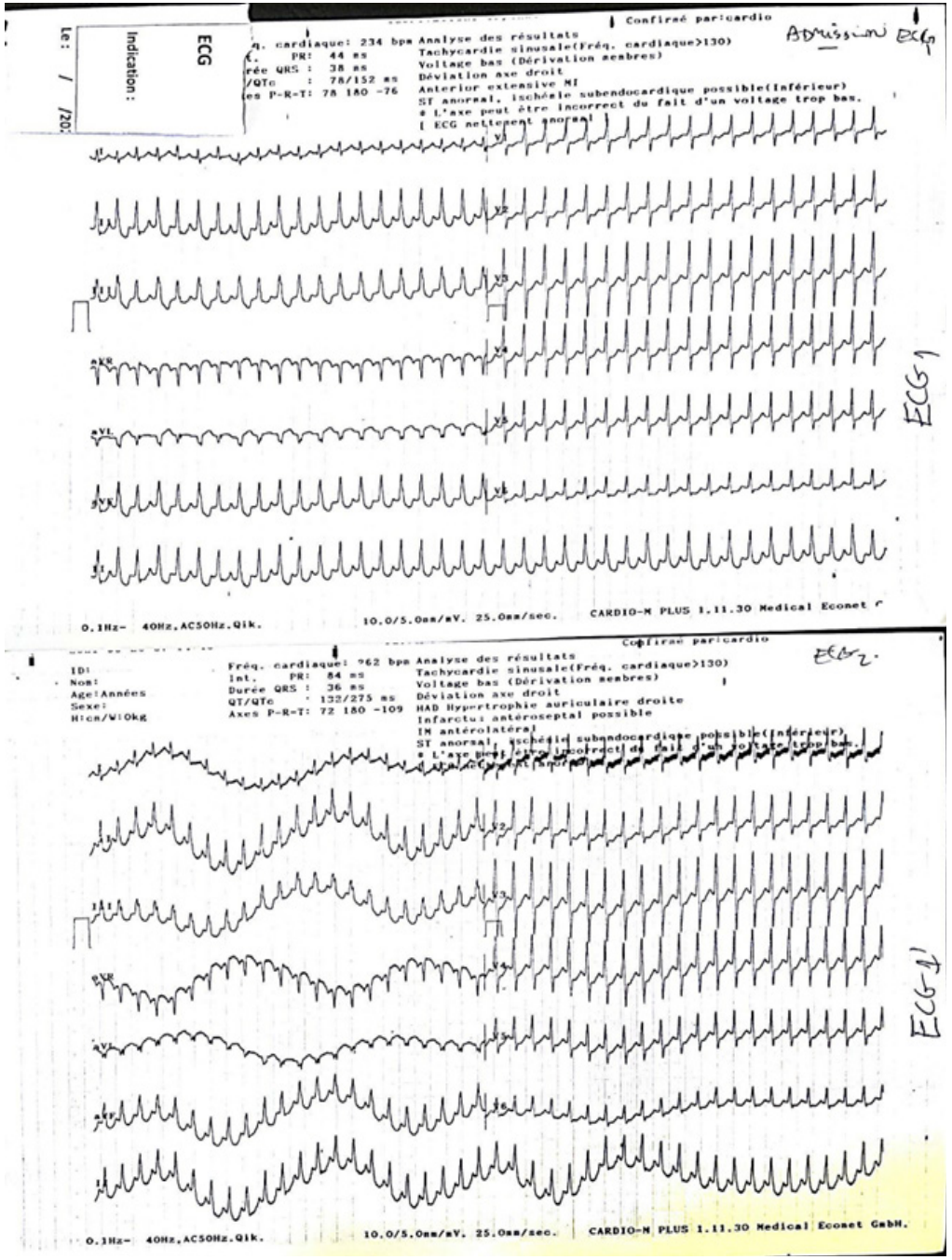


Figure 1: (ECG 1 and ECG 1') on admission

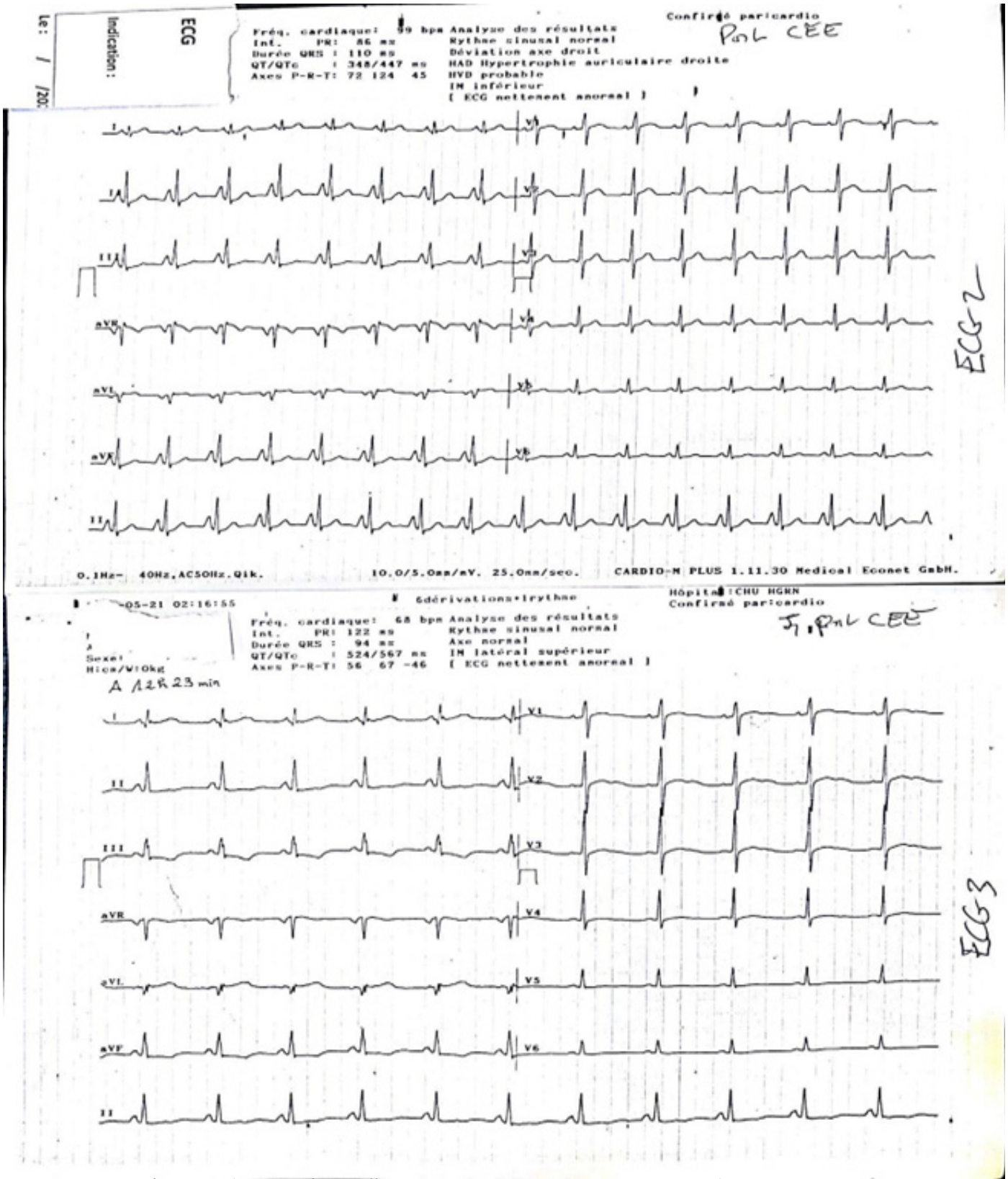


Figure 2: (ECG 2: immediate post-EWC ECG 3: D1 post-EWC)

Discussion

The management of poorly tolerated supraventricular tachycardia is a diagnostic and therapeutic emergency. Its frequency is of the order of 1/15000 (1). In orthodromic reciprocal tachycardias, there are two pathways: the nodo-Hissian pathway is used in anterograde, and the accessory pathway in retrograde, with a frequency of between 150 and 250/min, especially at the start of the crisis. Homolateral bundle-branch block may slow down the HA (anterograde conduction via the contralateral bundle-branch), sometimes compensating for this by shortening the AH (improved nodo-Hissian conduction) (2,3).

Supraventricular tachycardias are revealed by heart failure or cardiovascular collapse in 60% of cases. In our patient, the clinical presentation was one of immediate life-threatening cardiovascular collapse with metabolic acidosis. Vagal maneuvers can be useful, especially when accompanied by intravenous injection of striadyne, unavailable in our context. Left ventricular systolic function was preserved. The evolutionary risk could have been acute renal failure, given the incoercible vomiting and arterial hypotension.

The mechanism of the supraventricular arrhythmia was assumed on the basis of a few electrocardiographic criteria: the fine character of the QRS complex and the presence of a bundle-branch block associated with a P' wave pointed to orthodromic tachycardia (figure 1 ECG 1). In the absence of a return to sinus rhythm after vagal maneuvering, and the unavailability of striadyne, electrical cardioversion was the saving grace for us. After restoration of rhythm by EEC, special attention was paid to checking the PR interval. A short PR interval is most often indicative of orthodromic tachycardia in the accessory pathway. The patient was kept under observation to assess whether sinus rhythm was being maintained, and the PR had normalized by the next day on the follow-up ECG, confirming the diagnostic hypothesis, which would have required electrophysiological exploration. Ablation remained the treatment of choice (4,5). An algorithm for the management of regular supraventricular tachycardias with fine Qrs is well described in the 2019 recommendations of the European Society of Cardiology (figure 4 page 671) (6). Unfortunately, the technical resources on site did not allow us to carry out all the steps involved. Steps were taken to send the patient abroad for treatment. The patient tolerated the beta blocker treatment well, and monthly monitoring was carried out with no new events at six months and one year of follow-up.

Conclusion

Reciprocal orthodromic supraventricular tachycardias with poorly tolerated hidden accessory pathways are a diagnostic and therapeutic emergency. External electric shock is the first-line treatment, and maintenance of sinus rhythm can be ensured by antiarrhythmic drugs. Management requires electrophysiological exploration followed by ablation, usually by radiofrequency.

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