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Brugada Syndrome Type 1 Electrocardiogram Pattern Induced by Fever in a Black African: A Case Report

Soulemane Pessinaba[1*], Ekpé Togbossi[1], Wiyaou Kaziga[1], Baete Koudéma[1], Pizeriwé Dossim[1], Komlavi Yayehd[1], Mohamed Kpélafia[1], Nkenon Watani N'Da[1], Borgatia Atta[2], Tchaa Tchérou[2], Yaovi Afassinou[3], Machihude Pio[2], Soodougoua Baragou[3], Adama Kane[4], Findibe Damorou[1]

[1]Cardiology Department, Campus Teaching Hospital, Lome, Togo
[2]Cardiology Department, Kara Teaching Hospital, Kara, Togo
[3]Cardiology Department, Sylvanus Olympio Teaching Hospital, Lome, Togo
[4]Cardiology Department, Saint-Louis Hospital, Saint-Louis, Senegal
Email: *spessinaba@yahoo.fr

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Abstract

Brugada syndrome is a channelopathy that can be familial or sporadic. It is a major cause of sudden death in young people with no obvious heart structural abnormality. The electrocardiogram can be dynamic over time with sometimes normalization. Several pathophysiological conditions are known to induce the electrocardiographic expression of the syndrome. We report here the case of a 65-year-old hypertensive man, without syncope or family sudden death history who was hospitalized for shigella gastroenteritis. Electrocardiogram during fever showed an incomplete block and ST segment elevation with negative T waves in V1 and V2 suggested type 1 Brugada syndrome. Troponin was negative. Electrocardiogram after fever recovered an incomplete right block and normalization of the ST segment. Electrocardiogram should be performed in patients admitted to the emergency unit for infectious syndrome in our countries. This may reveal a number of patients with Brugada syndrome abnormalities.

Keywords

Brugada Syndrome, Electrocardiogram, Fever

1. Introduction

Brugada syndrome is a channelopathy that can be familial or sporadic. It is a major cause of sudden death in young people with no obvious heart structural

abnormality. The electrocardiogram (ECG) can be dynamic over time with sometimes normalization. Several pathophysiological conditions and drugs are known to induce the electrocardiographic expression of the syndrome [1] [2] [3]. We report a case of a black African patient whose electrocardiographic expression was exposed by fever.

2. Case Presentation

A 65-year-old hypertensive patient known for 10 years, was received in the emergency department of the Campus teaching hospital for, abdominal pain, mucous and bloody stools; and fever. There was no chest pain or syncope. The patient did not report any episodes of palpitations or syncope in the past. There was no history of family sudden death or known family heart disease. On admission the temperature was 40˚C, blood pressure was 155/95 mmHg, heart rate was 95 bpm. Physical examination had found regular heart sounds and abdominal tenderness.

ECG twelve (12) leads had objectified a regular sinus rhythm at 90 bpm, incomplete right branch block with ST segment elevation and T waves negative in the right precordial leads (V1, V2), typically corresponding to type 1 Brugada syndrome (**Figure 1**). Echocardiography was normal. Troponins I and CK-MB were normal. Potassium was 4.5 mmol/L (3.5 - 5 mmol/L), Sodium 132 mmol/L (133 - 143 mmol/L) and chlorine 101 mmol/L (95 - 105 mmol/L). ECG 6 and 24 hours later were identical to the first. White blood cells were at 12,500/mm^3 and stools examination had found "*Shigella* sp.".

Treatment made was paracetamol, ciprofloxacin and metronidazole. Evolution was favorable with apyrexia (36˚4) after 48 hours of treatment. ECG performed during apyrexia had objectified incomplete right block and a normalization of the ST segment (**Figure 2**).

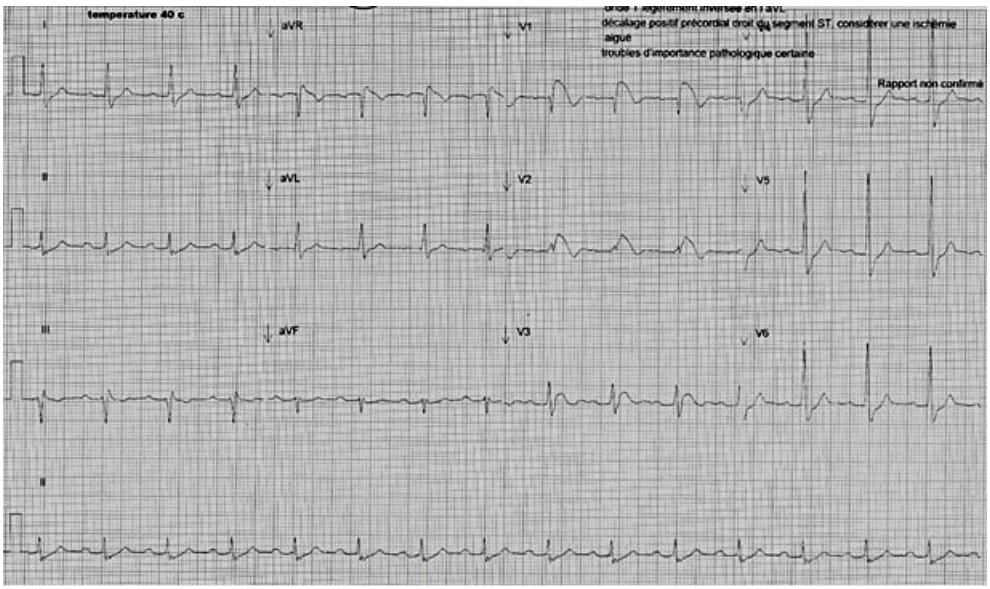

Figure 1. Brugada type 1 with fever at 40˚5C.

Figure 2. Incomplete right branch block with regression of the ST segment elevation at 36˚4C.

3. Discussion

Brugada syndrome is a rare channelopathy. The worldwide prevalence is estimated at 0.5 per 1000 [4]. Brugada syndrome is widespread in Southeast Asia and type-2/3 Brugada pattern is more frequent [4]. To our knowledge, there are no data or cases reported in Sub-Saharan Africa. A few rare clinical cases have been described in black Africans [5] [6] [7].

Brugada syndrome is a purely electrical genetic disease with no identifiable heart structural abnormality. In this condition, genetic abnormalities lead to an inability of the sodium channel to express itself, but also to a reduction in sodium current or rapid inactivation of the channel [8]. The dysfunction of sodium channels causes heterogeneity of repolarization between the myocytes of the endocardial and epicardial layers which is reflected on ECG by ST segment elevation and which promotes the initiation of polymorphic ventricular tachycardia [9]. Accelerated sodium channel inactivation can be temperature sensitive [10]. Fever can also affect the conductance of sodium channel. Cases of Brugada Syndrome during fever and taking substances such as Marijuana had been reported [11] [12] [13]. To our knowledge, our case is the first reported in Sub-Saharan Africa. This observation challenges us on the rarity of the affection in Africa. Perhaps it contributes to the deaths of infectious diseases in our countries, as Aba had already pointed out [5].

The absence of symptoms and a family history of sudden death appears to be a good prognosis, but caution should be exercised [12]. In these patients, prompt treatment and consultation in an emergency unit are indicated in the event of fever.

ECG should be performed in patients admitted to the emergency unit for infectious syndrome in our countries. This may reveal a number of patients with Brugada Syndrome type abnormalities.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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