

# Syncope In A 31 Years Old Athlete during The Semi-Marathon Race of Yaounde Following The Ingestion of A Stimulating Drink: Case Report

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## Abstract

Syncope is one of the rare but serious heart attacks occurring in an athlete during a semi-marathon race. The aim of this case report is to bring awareness of such accidents to the sports community in sub-Saharan Africa where little is published about syncope in athletes. We are reporting the case of a 31-year-old Cameroonian half-marathoner with no contributing past medical history, and whose Precompetition medical assessment (PCMA) performed 48 hours before the race was normal. The young man started the race at a favorable temperature of 26°C at 6 AM in Yaounde. An hour prior to the beginning of the race, the semi-marathoner drank without medical advice 66cl of a caffeine-based energy drink. After 17 kilometers of running without oral rehydration (out of medical advice), he abandoned the race, due to intense physical asthenia, constrictive pain under the diaphragmatic muscle, dizziness, palpitations, then fall from its height occurring 30 minutes after stopping the race with the spontaneous recovery of the state of consciousness a few minutes later during his medical transportation to the Emergency center of Yaounde were the early management showed a conscious, restless athlete with stable hemodynamic parameters: BP: 116/53mmhg, Regular and symmetric pulses at 63 pulsations/minute, Regular Respiratory Rate: 22 cycles per minute, the Body temperature of 37,8°C, Blood saturation (SaO<sub>2</sub>) of 94% in ambient air, Glycemia on the spot found at 1,03 g/l. The resting 12 leads Electrocardiography done at the emergency unit was like that of the PCMA excluding the absence of bradycardia. Doppler echocardiography is normal, as well as Troponin that was done 12 hours (H12) after the beginning of chest pain. So far, the working diagnosis was syncope due to a probable coronary Vaso spasm following the ingestion of a stimulant substance in the context of acute dehydration and intense physical exertion. The possibility of a paroxysmal rhythm disorder was still to be excluded.

**Keywords:** Athlete; Semi-marathon; caffeine-based stimulant drink; acute dehydration; athlete's heart

## Introduction

The syncope or loss of transitional consciousness secondary to cerebral hypoperfusion, belongs to heart accidents, in very happily rare semi-marathons [1]. It is characterized by a brutal start, a short duration, and a return to spontaneous and total consciousness. In Cameroon, few statistical data are available on syncope in the efforts occurring on athletes. The semi-marathon is a running race that comes on a road for 21.1 kilometers, half the distance of a marathon. This race is a non-Olympic discipline, in which experienced amateur sportsmen and professionals meet. The positive diagnosis of syncope is often evocative as soon as the victim is examined, or witnesses are interviewed. All the interest lies in the search for aetiologies that schematically regroup in three distinct causes: reflexive, heart, and orthostatic hypotension causes. Their initial assessment must above all eliminate presentations other than a transitional loss of consciousness, as well as the loss of consciousness of non-syncopal origin (epileptic, psychogenic, metabolic, other ...). The anamnesis, as well as the clinical examination, a resting electrocardiogram (ECG) of 12 leads make it possible to guide the suspicion to establish the best diagnostic strategy. Some situations, such as reflex syncope or orthostatic hypotension, can be diagnosed directly at the initial exam, while cardiac syncope often requires other examinations to establish precise diagnosis and guide treatment (echocardiography of Rest or effort, ECG monitoring, tilt-test, physiological electro exploration, event recorder). Recommendations ESC 2018 introduces low-risk criteria, making it possible to carry out outpatient investigations, and high-risk criteria, leading to the patient's hospitalization or admission to a syncope unit. On the therapeutic level, reflex syncope generally responds well to education and learning maneuvers but may require the implementation of a pacemaker in certain situations. Finally, syncope of rhythmic origins very often requires the implantation of a pacemaker or the removal of a disorder of the rhythm.

We are reporting the case of syncope in a 31-year-old athlete during a semi-marathon in the city of Yaoundé organized on December 7, 2019. Our goal is to sensitize athletes, the scientific community, and stakeholders not only on the health hazards of an inappropriate practice of physical and sports activities (PSAs) but also to communicate the rules of good practice of PSAs, whose practitioner's health benefits are no longer to be demonstrated.

## Case presentation

Mister ND aged 31, is a confirmed athlete, a student in the National Institute of sports, single, and a Christian who originates from Massa Tribe in the Far North region of Cameroon.

He was brought to the emergency unit of Yaounde center for a fall of its height with a breve loss of consciousness, and constrictive chest pain following a semi-marathon race an hour ago.

He has no major cardiovascular risk factors (CVRF). Its consumption habits are caffeine-stimulating drinks such as "Reactor". He had a non-contraindication certificate to the practice of competitive sport 48 hours prior to the race consisting of a normal clinical examination, a Full blood count showing a normal hemoglobin level at 14.3 g / DL, and a normal ECG showing sinus bradycardia at 45 beat per minute confirming the athlete heart of the young man. No other personal or familial contributing past history is recorded.

The athlete started Yaounde's international semi-marathon on December 7th, 2019, at 7 am, at a favorable temperature of 26°Celsius. After 17 kilometers of the race, about 2 hours of running in a rising temperature of 28°Celsius, the athlete presented a malaise described as intense physical asthenia, constrictive pain under the diaphragmatic muscle, dizziness, palpitations, and, then fall from its height occurring 30 minutes after stopping the race with the spontaneous recovery of the state of consciousness a few minutes later.

While being examined at the emergency unit, the young man declares to have taken without medical prescription two bottles (66CentiLiters) of a caffeine-stimulating drink called "Reactor", one hour prior to the beginning of the race to "get ready for the race" and ate nothing after.

The Athlete reported that he decided to bypass the first 3 water supply points of the circuit race pretending to not «waste time». until the point of appearance of intense physical asthenia, constrictive chest pain, dizziness, and palpitations, leading to a quit of the race at the 17th kilometer of the competition circuit, where he was first carried out by the police car and received oral rehydration, sugar intake that led to gradual relieve of symptoms while being transported at the arrival point of the race where he was discharged with great improvement of symptoms. The evolution is marked 30 minutes after by the reoccurring of the same symptoms this time associated with vertigo, and palpitations, followed by a fall of its height with loss of consciousness, without convulsions, and spontaneously resolute during ambulance transportation to the Yaounde emergency center (CURY).

At his arrival the physician reported a calm, conscious athlete, well oriented, the clinical examination showed a patient in a stable hemodynamic state with satisfactory vital parameters: PA: 116/53 millimeter of mercury, a regular and symmetric pulse at 63 pulsations/minute, a regular Respiratory Rate at 22 cycles per minute, a temperature at 37.8°C, SAO<sub>2</sub>: 94% in ambient air, spontaneous blood glucose at 1.03 g / l.

The examination of the digestive system was relevant to epigastric tenderness. The rest of the clinical examination had no particularity.

The resting Electrocardiogram (ECG) of 12 leads done at the emergency Unit is similar to the one done 48 hours before the race except for the absence of bradycardia. It showed a regular sinus rhythm of 64 beats per minute. Good conduction. The presence of early repolarisation (point J) on V2 to V6 leads, classically described in a normal Afro-Caribbean young athlete's heart.

Resting Transthoracic echocardiography showed a harmonious dilatation of the four cavities of the heart. A no hypertrophic left ventricle, with a good global and segmental systolic function (LVEF: 57.65%). No diastolic dysfunction of the left ventricle or pericardium was normal, and the rest of the echocardiographic examination was normal without intracavity thrombus.

No other morphological workout was performed due to financial limitations. Biology workout showed: Troponin <0.05ng / ml at H12. The rest of the requested balance sheet was not made due to the financial limitations of the patient.

## Discussion

For Our diagnostic discussion, we thought at the beginning of syncope of cardiac origin consecutive to a paroxysmic rhythm disorder itself due to a Non ST acute coronary syndrome. With a thrombo embolic mechanism involved (notion of ingestion of stimulating substances that can be thrombogenic) or on healthy coronary spasm. The possibility of an atherosclerotic mechanism is unlikely in view of the absence of major CVRFs found in our young athlete. An anormal start of coronary arteries is reported in the literature as possible aetiologies of syncope occurring in athletes under 35 years. But the realization of magnetic resonance imaging or a coronarography tomodensitometry to support this hypothesis has not been possible for lack of funding. A second cardiac etiology evoked was the long Qt syndrome in view of acute dehydration favorable to metabolic disorders. But the ECG performed during the PCMA and the one done at the emergency unit were not in favor. Thirdly, the hypothesis of severe acute dehydration associated with a gastric or hepatic spasm during intense effort following ingestion of a stimulating substance could lead to metabolic disorders responsible for loss of consciousness.

The treatment consisted on Initial intravenous liquid intake; Saline serum 1000 cc / 24 hours. 2- Aspirin; load dose 300 mg 3-Clopidogrel 75mg; 300 mg in charge dose. 4-Enoxaparin 80mg / 12h in S / C 5-Omeprazole 40mg / 24h IVD 6-Paracetamol (Permalgan) 1G / 6H IVD If pain. VII. The evolution was favorable during hospitalization, marked by the disappearance of sub-diaphragmatic pain, no more chest pain, and no other episode of syncope, the hemodynamic parameters remained stable, a further cardiologist evaluation of the patient concluded to

- Probable Acute dehydration syndrome associated with a probable gastric spasm (or splenic or liver) secondary to intense physical activity.
- Possible coronary spasm.

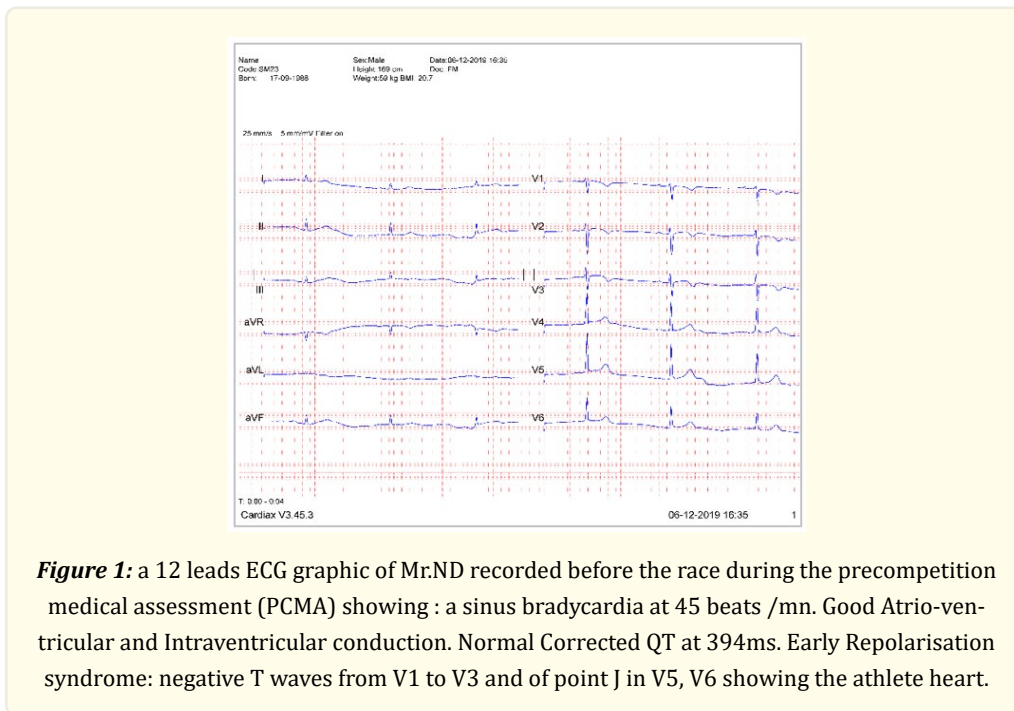
The patient was discharged after 3 days of observation on the following treatment:

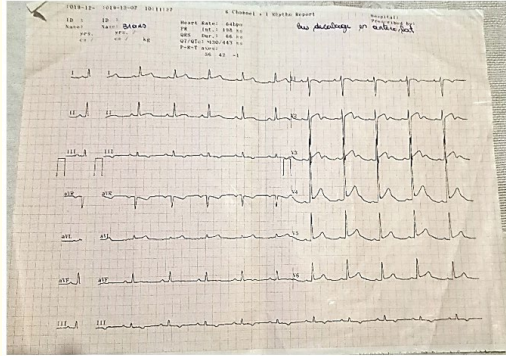
- Omeprazole 20mg: 1 Capsule in the evening for 7 days.
- Counseling on avoiding the intake of stimulating substances during physical effort.
- The proper rehydration of the athlete during sports activities.
- We recommended further cardiac explorations such as the 24-hour ECG monitoring, and the stress ECG test before resuming sports competition.

## Conclusion

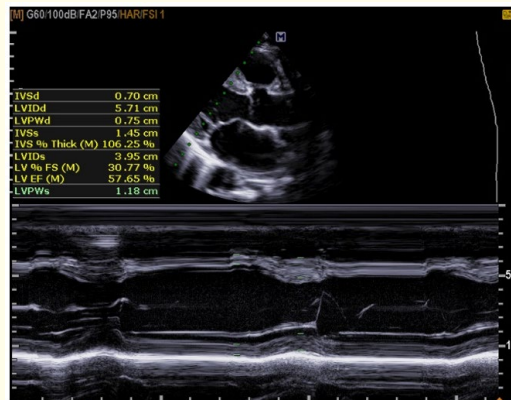
Syncope occurring in an athlete during exercise is a serious and rare case. Precompetition medical assessment is the element in preventing the occurrence or reducing the severity of such accidents as it was in this case report. Advanced paraclinical assessments of syncope are often limited in sub-Saharan African settings due to many factors. Athletes education is to be seriously underlined among competitive sports medical teams.

## Iconography

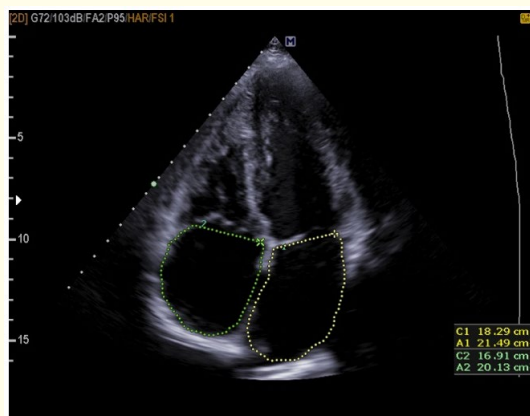




**Figure 2:** The second 12 leads ECG graphic of Mr. ND recorded at the Emergency Unit after the syncope. Normal sinus rhythm at 64 battements/min. normal corrected QT at 443ms.



**Figure 3:** Echocardiography Doppler in Time Motion. parasternal long axis section showing normal Left Ventricle dimensions.



**Figure 4:** Echocardiography Doppler Bidimensional. apical 4 cavities section showing a mild and harmonious enlargement of the four cavities of the athlete heart.

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