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Unusual finding of ventricular tachycardia in a healthy heart: a case report
Découverte inhabituelle d'une tachycardie ventriculaire dans un cœur sain : un cas clinique

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Résumé

La tachycardie ventriculaire (TV) est une urgence cardiaque majeure qui survient rarement chez les personnes en bonne santé cardiaque. Nous présentons ici, le cas d'une femme au foyer de 23 ans sans aucun facteur de risque cardiovasculaire connu. Elle se plaignait de palpitations intermittentes, régulières et rythmiques présentes depuis plus de 4 mois. L'examen physique a révélé une fréquence cardiaque rapide de 200 bpm, une pression artérielle de 127/82 mmHg, le reste de l'examen physique étant normal. L'électrocardiogramme a montré une tachycardie régulière avec un QRS large (durée de 128 ms), une dissociation auriculo-ventriculaire et une fréquence ventriculaire de 204 cycles par minute, suggestive d'une tachycardie ventriculaire. L'échocardiographie Doppler était normale, à l'exception d'une hyperkinésie suggérant le diagnostic d'une TV soutenue bien tolérée dans un cœur apparemment sain. Une dose de charge d'amiodarone (30 mg/kg) a entraîné une cardioversion complète avec retour au rythme sinusal après six heures. L'issue ultérieure a été favorable. Grâce à cette observation, nous pouvons déchiffrer un cas de tachycardie ventriculaire dans un cœur apparemment sain. Dans la littérature, le symptôme principal de cette pathologie reste les palpitations et la prise en charge nécessite des médicaments antiarythmiques ou une ablation de la TV.

Mots-clés : tachycardie ventriculaire, cœur sain, littérature, Burkina Faso
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Summary

Ventricular tachycardia is a major cardiological emergency that rarely occurs in healthy hearts. Here, we present a 23-year-old housewife with no known cardiovascular risk factors. She complained of intermittent, regular, rhythmic palpitations that had been present for more than 4 months. The physical examination revealed rapid heart rate of 200bpm, blood pressure 127/82 mmHg, and the rest of the physical examination was normal. The electrocardiogram showed regular tachycardia with wide QRS (128 ms duration), atrioventricular dissociation and a ventricular rate of 204 cycles per minute, suggestive of ventricular tachycardia. Doppler echocardiography was normal apart from hyperkinesia suggesting the diagnosis of well-tolerated sustained VT in an apparently healthy heart. A loading dose of amiodarone (30mg/kg) resulted in complete cardioversion with a return to sinus rhythm after six hours. Subsequent outcome was favourable. On the basis of these observations, a case of ventricular tachycardia in an apparently healthy heart was confirmed. In the literature, the major symptom of this pathology remains palpitations and its management requires antiarrhythmic drugs or ablation for VT.

Keywords: ventricular tachycardia, healthy heart, literature, Burkina Faso

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Introduction

Ventricular tachycardia (VT) is a serious cardiac arrhythmia generally associated with underlying cardiac pathologies such as myocardial infarction, dilated cardiomyopathy or hereditary electrical disorders (1). However, in some rare cases, this arrhythmia can occur in an apparently healthy heart, with no detectable structural or functional abnormalities (2). Here, we reported an unusual finding of ventricular tachycardia in an apparently healthy heart. This atypical presentation raises questions about the underlying mechanisms, risk factors and therapeutic management of this condition (3). The discovery of ventricular tachycardia in an apparently healthy heart presents a major diagnostic and therapeutic challenge. Although such cases are rare, their management is crucial, as VT can lead to syncope, heart failure and even cardiac arrest if not treated appropriately (2).

Observation

The patient was a 23-year-old housewife with no known cardiovascular risk factors. She had no other personal or family history. She was the mother of a seven-month-old child. She complained for intermittent, regular palpitations with no fixed timetable, rhythmic and evolving for more than 4 months. These episodes were accompanied by hot flushes and hypersudation without any notion of syncope or calming factors. The physical examination revealed rapid heart rate of 200bpm, blood pressure 127/82 mmHg, and the rest of the physical examination was normal. The electrocardiogram showed regular tachycardia with wide QRS (128 ms duration), atrioventricular dissociation and a ventricular rate of 204 cycles per minute, suggestive of ventricular tachycardia (VT) (Figure 1).

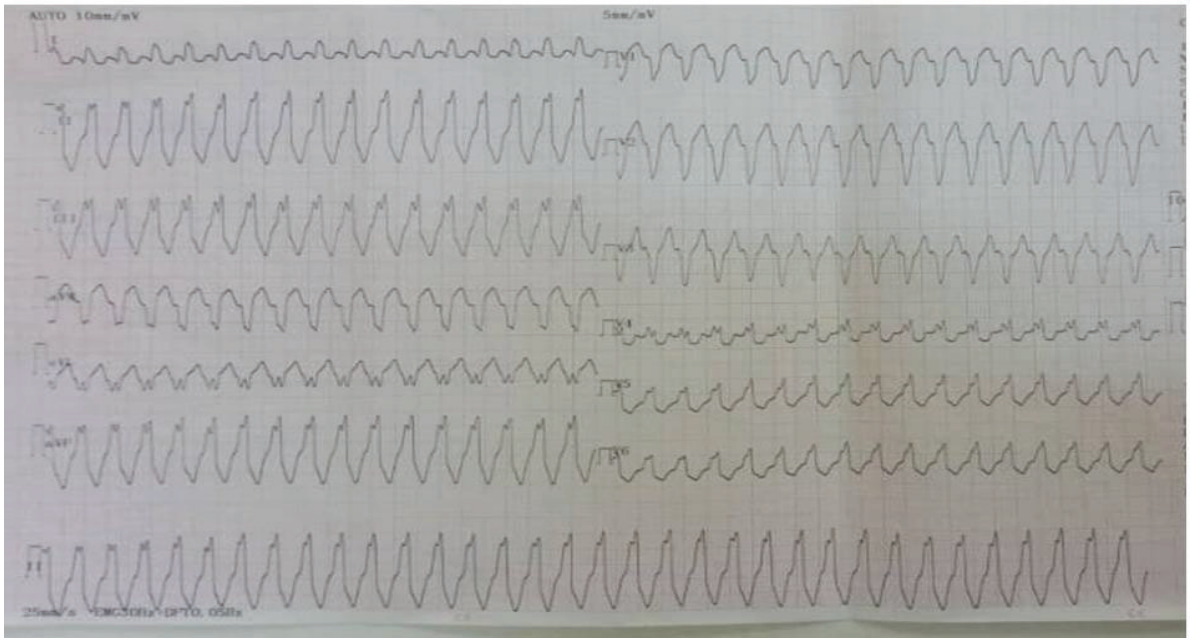

Figure 1. Standard 12-lead electrocardiogram showing a regular tachycardia with a wide QRS (128 ms duration), monomorphic, atrioventricular dissociation and a ventricular rate of 204 cycles per minute, suggesting a ventricular tachycardia without a fusion or capture complex

Doppler echocardiography showed normal-sized heart chambers and good systolic function in both ventricles, with hyperkinesis of the heart walls (Figure 2).

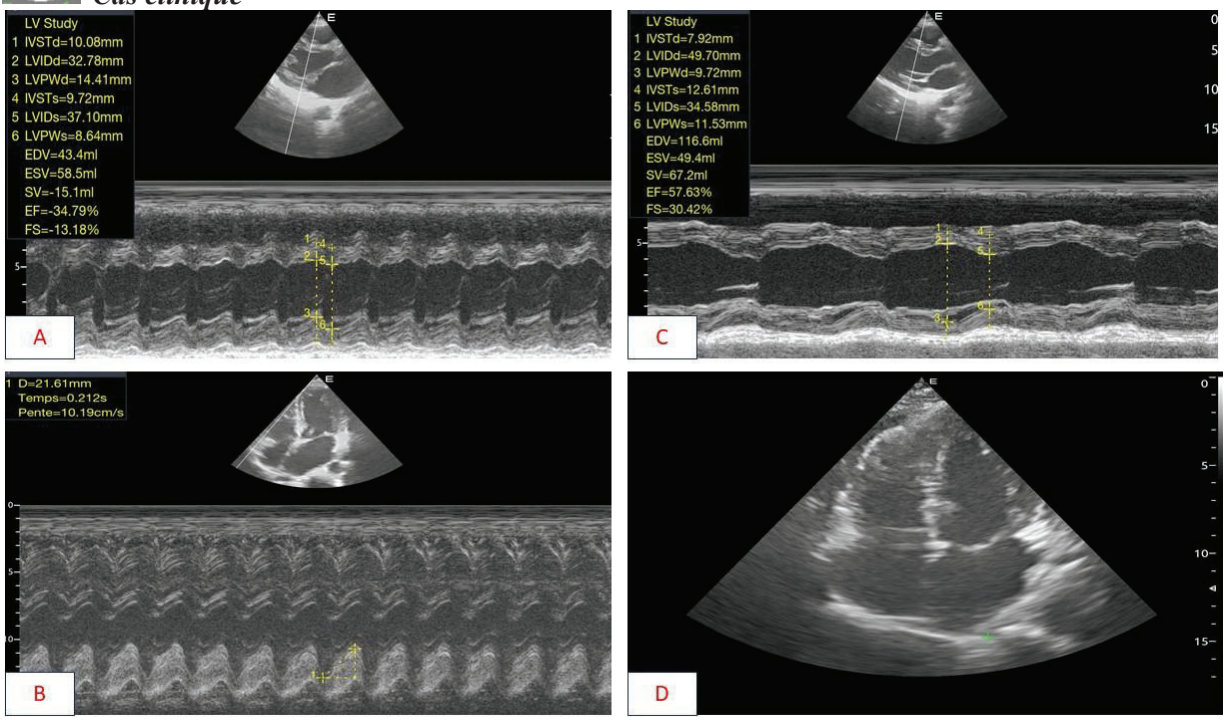

Figure 2. Doppler echocardiography

A: long-axis asternal slice on admission with impaired left ventricular dimensions and ejection fraction
B: apical 4-cavity section coupled to TM mode at the tricuspid annulus showing good systolic excursion of the tricuspid annulus
C: long axis asternal slice after reduction showing left ventricular dimensions and preserved ejection fraction
D: apical 4-cavity section showing thrombus-free cardiac cavities and no left intra-cavity trabeculation

Thyroid hormones, blood ionogram and haemogram were normal. We accepted the diagnosis of well-tolerated sustained VT in an apparently healthy heart. A loading dose of amiodarone (30mg/kg) resulted in complete cardioversion with a return to sinus rhythm after six hours (Figure 3).

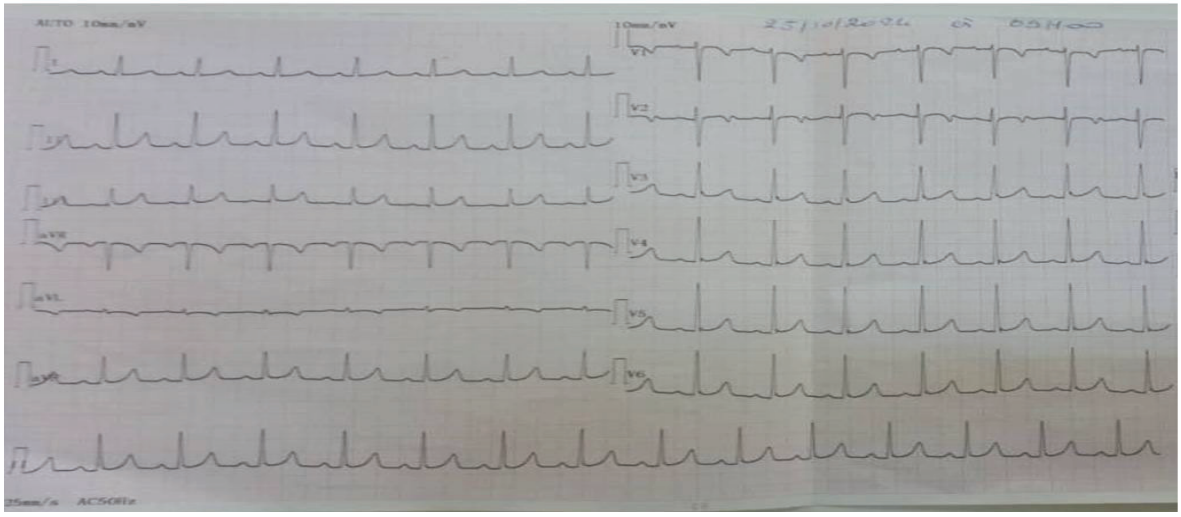

Figure 3. 12-lead surface electrocardiogram showing a return to sinus rhythm after six hours on amiodarone

After observing a stable rhythm on a maintenance dose of 600 mg/day of amiodarone, the patient was discharged and given bisoprolol 5mg/day (Figure 2). We saw the patient again one month later and she had become asymptomatic with a regular sinus rhythm on ECG.

Discussion

The occurrence of VT in a healthy heart remains rare and raises important questions about the mechanism of its genesis (4). VT episodes are frequently initiated by right ventricular birth extrasystoles with positive QRS morphology in lead I (5). Case reported by Seghda *et al*. (7) is similar in several respects to the case we are describing. The prevalence of VT in a healthy heart is approximately 2 to 3% in the world literature (6). This atypical form is often associated with genetic factors, such as pre-excitation syndromes, Wolff-Parkinson-White syndrome, ion channel disorders such as long QT syndrome, or isolated electrophysiological abnormalities with no identifiable structural cardiac pathology (6). Traumatic events, such as shock or intense physical effort, can also trigger these arrhythmias in individuals with no previous cardiac history, although not in the case of our patient (7).

Clinically, VT in a healthy heart is often discovered by chance, during an assessment of chest pain, palpitations, malaise or syncope (8). In this case, the patient, a 30-year-old woman with no previous cardiac history of note, presented with palpitations and no associated chest pain. Electrophysiologically, VT in a healthy heart can result from a variety of mechanisms. In patients with no apparent cardiac disease, disturbances in cardiac electrical conduction or alterations in repolarisation can lead to reentrant circuits in the ventricles (9). In this patient the QTc was normal, which does not differ from the QTc of patients with idiopathic monomorphic VT (10). Ionic abnormalities, such as hyperkaliemia, calcium or magnesium imbalance, may also play a key role in the initiation and maintenance of VT. In our case, neither the electrophysiological study in search of conduction disorders, nor the search for genetic abnormalities, could be carried out in this patient due to limitations in the means of investigation. The absence of structural heart disease was accepted on the basis of clinical and echocardiographic arguments, leading to the diagnosis of VT in a healthy heart. The diagnosis of VT in a healthy heart is a diagnosis of elimination and requires an exhaustive aetiological work-up. Cardiac magnetic resonance imaging, if carried out, would make a fundamental contribution to confirming that this is indeed a healthy heart, and would complement the inadequacy of cardiac Doppler ultrasound.

The therapeutic management of VT in a healthy heart depends on the severity of the episodes and the risk of haemodynamic instability (4). In our case, the first line of treatment was chemical cardioversion, with close monitoring. Beta-blocker therapy was initiated to prevent recurrence. Although the efficacy of verapamil has been demonstrated in several studies, its administration requires identification of the type of VT, as it can be fatal in certain forms (1, 11). Several therapeutic options are described in the literature, ranging from antiarrhythmic drugs to implantable devices such as cardioverter-defibrillators, particularly in cases of recurrence or risk of sudden death (8). However, ablation may appear ineffective because patients do not necessarily have inducible VT to begin with (8).

The prognosis for VT in healthy hearts is generally favorable, especially when the underlying cause is benign or of controllable genetic origin (8). Patients with paroxysmal VT without structural heart disease have an excellent long-term prognosis. However, recurrence of the arrhythmia remains a significant risk, especially if persistent electrophysiological abnormalities are present (12). In our patient's case, long-term follow-up includes ECG monitoring and electrolyte control to avoid any worsening.

Conclusion

Through this observation, we have deciphered ventricular tachycardia in healthy hearts, which, although rare, remains a major clinical phenomenon requiring in-depth evaluation. The main symptom of this condition is palpitations, and the occurrence of haemodynamic instability is a major concern. Diagnosis is based on the exclusion of

underlying cardiac pathologies, thanks to imaging tests that are still not widely available in our context. Management is based on an individualized approach, taking into account the type of arrhythmia, the risk of recurrence and the treatment options available. Long-term monitoring is essential to assess prognosis and prevent serious complications.

Conflict of interest

We have no conflict of interest.

Patient consent

We have obtained the patient's consent for publication of these data.

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