

Fatal polymorphic ventricular tachycardia in a primary health center setting: A case report

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ABSTRACT

Polymorphic ventricular tachycardia (PVT) is a lethal cardiac arrhythmia. It requires medical intervention, including defibrillation, or imminent death may result. A 26-year-old male patient presented to the emergency department with complaints of syncope while working on the farm; later diagnostic testing indicated PVT. As cardiovascular disorders are becoming increasingly prevalent in urban as well as rural areas, it is a need of time to make our facilities well equipped for resuscitation measures by implementing advanced cardiac life support.

Keywords: Advanced cardiac life support, polymorphic ventricular tachycardia, syncope

Background

Polymorphic ventricular tachycardia (PVT) is a potentially fatal arrhythmia that typically affects patients with structural heart problems. Monomorphic and PVT are two types of ventricular tachycardia (VT). Monomorphic tachycardia occurs when the QRS complexes remain the same from beat to beat, indicating a persistent tachycardia originating from a focus or a structural substrate.^[1] We present a case of a 26-year-old male with syncope induced by a fatal PVT in a primary health center setting in Samudrapur. Any lacunae in management options for advanced cardiac life support (ACLS) bear increased morbidity and mortality risk. In this case, the outcome was fatal, resulting in the death of the patient 30 min after entering the emergency room. Furthermore, we underlined the challenges

in the treatment and long-term management of such a cardiac disease. Ultimately, we can raise doctors' awareness of the importance of diagnosing cardiac diseases by addressing the challenges. The uniqueness of this case is that the affected patient was quite a young male and he succumbed, which is rarely seen among the young adults.

Case Presentation

A 26-year-old male with no significant medical history was admitted to the emergency department of the primary health center after presenting with syncope while working on the farm. The patient's father reported a similar episode one month back. The patient had regained consciousness when he arrived at the emergency room, but he was lethargic, tachypneic, and diaphoretic. The blood pressure was 88/70 mmHg; the pulse was 258/min. On physical examination, he had cold extremities. A 12-lead electrocardiogram showed a sustained PVT at 298/min [Figure 1]. The patient was given a 300 mg bolus of Inj. Cordarone. But the patient succumbed within 30 min after arriving at the emergency room. The written informed consent for publication of this case was obtained from the parents of the patient.

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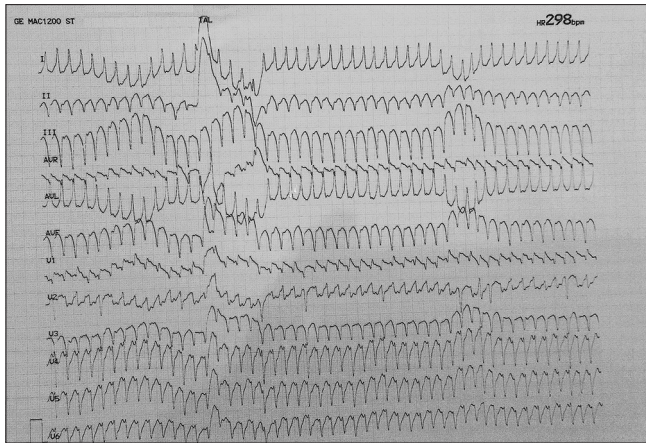


Figure 1: Electrocardiogram shows PVT

Discussion

This case of fatal PVT in a 26-year-old male patient with no significant medical history was reported in a primary care setting. VT is a fatal ventricular arrhythmia. Ischemic heart disease is one of the most common etiological factors responsible for VT.^[2]

A previous infarct is the most prevalent cause of the scar. The authors did not have any previous electrocardiogram data that could reveal the primary cause of VT in the present case. The patient described here was young with the absence of any significant medical history, but VT can also occur without structural heart disease.^[3] Although there has been a rise in the incidences of cardiac disease in India, the diagnostic and therapeutic facilities required to treat this disease are generally insufficient, making emergency treatment challenging.^[4]

Cardiovascular diseases are the most significant cause of mortality worldwide. Developing countries have a fast expanding and disproportionate burden of cardiovascular disease, yet differences in context and financial constraints have a substantial impact on therapeutic options, particularly with regular diagnostic and interventional procedures. Furthermore, widespread awareness, diagnostic facilities, and therapeutic options for several cardiovascular crises are still lacking. Providing exemplary emergency and urgent care in resource-constrained countries is a significant problem.

There are a plethora of issues pertaining to the infrastructural facilities, transport and communications, drug supply chains, and the presence of experienced and qualified clinicians. In the past, the leading causes of patient morbidity and mortality in resource-constrained environments were infectious diseases. Noncommunicable diseases, such as cardiovascular disorders, are rising in developing nations and have become significant causes of morbidity and mortality.^[5]

In the majority of times, VT is well-tolerated if below 150 beats/min, however, VT at or above 200 beats/min is frequently unstable. As shown by altered consciousness, severe

hypotension, or other indicators of significant end-organ hypoperfusion, acutely unstable patients require immediate electrical cardioversion. Stable and well-maintained patients have adequate vital end-organ perfusion and do not show indications or symptoms of hemodynamic impairment. Treatment modality depends on the variant of VT whether monomorphic or polymorphic. Further, the management is also determined by assessing the ventricular function (normal or abnormal). Intravenous procainamide or sotalol is commonly used to restore sinus rhythm in stable patients with monomorphic VT and normal left ventricular function. Lidocaine is another option. Because procainamide can worsen heart failure, amiodarone (or lidocaine) is chosen for pharmacologic conversion if left ventricular function is poor. Nevertheless, the currently available evidence in the literature shows that Cordarone should not be the drug of choice as the first-line antiarrhythmic regimen for stable VT. This is because the drug has a gradual effect on myocardial conduction and refractoriness.^[6,7] As a result of the lack of a defibrillator in the hospital, cardioversion was attempted with an injection of Cordarone and supportive resuscitative measures with oxygen in our case report. This, however, proved ineffective, resulting in the death of the patient.

Conclusion

In developing countries, cardiovascular disorders, including VT, are on rising. Our healthcare facilities should be well-equipped for resuscitation measures by implementing ACLS. A life-threatening VT causes the most immediate fatalities after acute myocardial infarction. Many patients succumb before arriving at the hospital. In such cases, basic life support is crucial and it can save the lives of many patients. In general, training the medical and paramedical staff in essential cardiac life support is a prime requisite. By implementing ACLS, not only our primary but also our secondary healthcare facilities will be well-resourced and maintained for resuscitation measures.

Key message

In high-risk adults, timely attention to the early sign and symptoms of cardiovascular problems should be interpreted as a warning signal, and mobilization of necessary medical checkups, care, and support can be helpful in preventing mortality. So basic life support devices with trained manpower should be made available in primary care settings.

Declaration of patient consent

The written informed consent for publication of this case was obtained from the patient's parents.

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Conflicts of interest

There are no conflicts of interest.

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