

# Full disclosure: Unraveling the mystery of a wide complex tachycardia

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Wide complex tachycardia is not uncommon in patients with underlying structural heart disease and reduced ejection fraction. It is important to make the correct diagnosis as it carries prognostic and clinical implications. We present a case of a challenging wide complex rhythm detected on remote telemetry monitoring. This case outlines the differential diagnosis of a wide complex tachycardia and the clues to making a diagnosis of artifact. It highlights the importance of correct diagnosis as an incorrect diagnosis may lead to inappropriate treatments and unnecessary investigations.

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**Keywords:** Wide complex tachycardia, Artifact

## Introduction

Wide complex tachycardia (WCT) is not uncommon in patients with underlying structural heart disease and reduced ejection fraction. It is important to make the correct diagnosis as it carries clinical and prognostic implications. We present a case of a challenging wide complex rhythm detected on remote telemetry monitoring.

## Case report

A 66-year-old male patient underwent thoracic endovascular aortic repair for a type B dissection.

His postoperative course was complicated by delayed spinal cord ischemia. Past medical history was significant for myocardial infarction with the culprit artery a 90% proximal left anterior descending lesion treated with a drug eluting stent. Subsequent transthoracic echocardiogram documented a mild ischemic cardiomyopathy with a left ventricular ejection fraction of 40% with akinesis of the anterior wall, septum and apex.

Medications prior to hospital admission included metoprolol and ramipril both of which were discontinued to maintain systolic blood pressure above 100 mmHg to optimize spinal cord perfusion.

On postoperative Day 28, while on telemetry in the cardiac inpatient unit, an episode of WCT

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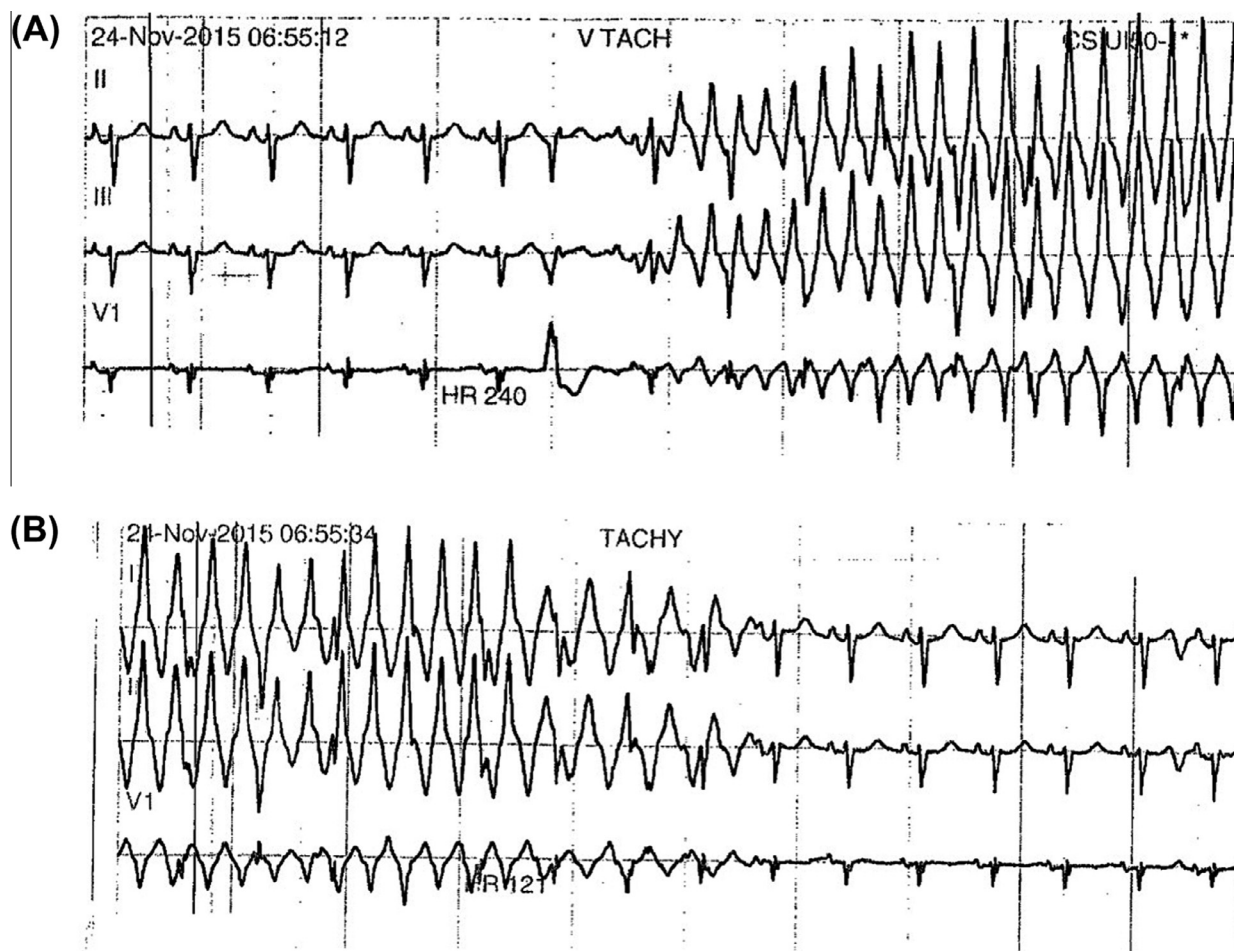


Figure 1. (A) Initiation of rhythm. (B) Termination of rhythm.

was detected on telemetry (Fig. 1). The patient was asymptomatic and hemodynamically stable during this episode. The team looking after the patient made a presumptive diagnosis of ventricular tachycardia and intravenous amiodarone was initiated followed by oral metoprolol. The electrophysiology service was subsequently consulted to assist with rhythm diagnosis and management.

## Discussion

The telemetry recording revealed a WCT with a ventricular rate of 240 beats/min. There was a premature ventricular complex prior to the onset of a wide, fairly regular rhythm that terminates spontaneously followed by a normal QRS. The episode duration was 30 seconds. A closer analysis of the rhythm strips, particularly the onset and offset of the rhythm, suggested the presence of a narrow QRS marching through at a rate of 70–75 beats/min. We were suspicious that the rhythm may have been the result of artifact.

Upon reviewing the full disclosure screen, which records seven leads, there was clearly a regular narrow QRS in lead I during the episode of apparent wide complex tachycardia (Fig. 2). The rhythm was diagnosed as artifact and amiodarone was discontinued.

The differential diagnosis of WCT includes ventricular tachycardia, supraventricular tachycardia (SVT) with pre-existing bundle branch block or intraventricular conduction delay, SVT with aberrant conduction, SVT with pre-excitation, paced rhythm, and artifact.

In a study by Knight et al. [1], 766 physicians were asked to review a two-lead rhythm strip documenting artifact mimicking ventricular tachycardia. The rhythm strip was not recognized as artifact by 52 of 55 internists (94%), 128 of 221 cardiologists (58%), and 186 of 490 electrophysiologists (38%).

The correct diagnosis of WCT is essential since it has significant management and prognostic implications. Artifact mistaken for ventricular tachycardia may result in unnecessary treatment, as was

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