

Diagnostic Challenge

Wide-complex tachycardia in a patient with syncope

Daren Lin, MD, CCFP(EM)

ANSWER

The correct answer in this case is d) none of the above. The patient had an amiodarone infusion started in a central line at the community hospital and was transferred to the referral centre. He was not known by the referral centre's electrophysiology service, and attempts to find records of an ablation procedure yielded no results. The 12-lead electrocardiogram of this patient did not show a delta-wave or PR shortening that would have been consistent with Wolff-Parkinson-White syndrome (see Figure 1). While admitted to the cardiac care unit, he was noted to be tapping on his chest leads during one of the episodes of wide-complex tachycardia registered on the monitor. A physician recognized him from his previous admission when he had presented as a patient with the symptoms of acute myocardial infarction and a history of coronary stent placement in New York City. During his last admission, he had a normal angiogram done at the referral centre. The New York hospital was called after the angiogram but had no record of any prior visit by this patient. However, around the time of the last admission, another cardiac centre 1 hour away from the referral centre reported a similar case of a young male with the same presentation but a different name receiving a normal angiogram at their centre. Before he could be discharged during this admission, he left without telling hospital staff.

Electrocardiographic lead artifact can be due to poor contact, electromagnetic interference, defective equipment, or motion artifact.¹ These artifacts can mimic arrhythmias and ischemic changes.¹ Knight and colleagues showed 766 physicians a rhythm strip of artifact, and 53% of cardiologists did not recognize the rhythm as artifact and recommended an invasive

procedure for the rhythm.² Unintentional electrocardiographic artifact has led to unnecessary procedures in asymptomatic patients.³ Huang and colleagues developed a prospectively validated clinical decision rule that differentiates between pseudoventricular tachycardia due to artifact and true ventricular tachycardia with a sensitivity of 100% and a specificity of 97.3%.⁴ One feature of pseudoventricular tachycardia is the notch sign, which are the superimposed notches of the underlying QRS complexes occurring at the regular R-R interval underneath the wide-complex rhythm.^{4,5} The notch sign can be seen in Figure 3. Other factors that suggest artifact in Figure 3 are the wandering baseline and lead noise before and after the event.¹

In this diagnostic challenge, the patient intentionally produced lead artifact to simulate fictitious illness. Fictitious disorder is defined as the intentional production of signs or symptoms to assume the sick role, without external incentives.⁶ Munchausen syndrome represents 10% of fictitious disorder and is characterized by the triad of simulated illness, pathologic lying, and wandering from place to place.⁶ The syndrome was named after Baron von Munchausen, who was known for traveling widely and telling tall tales.⁷ There are approximately 58 cases of cardiac Munchausen syndrome (also known as cardiopathia fantastica) in the literature.⁸ Most patients with this disorder were male (93%) and presented as acute coronary syndrome (86%). These patients had an average of six admissions, and 41% underwent more than one invasive procedure, including a permanent pacemaker and an intra-aortic balloon pump. In most cases, the patient altered the story, reported traveling great distances to seek help, had an excellent grasp of medical terminology, and never had visitors. Lead

From the Division of Emergency Medicine, McMaster University, Hamilton, ON.

Correspondence to: Dr. Daren Lin, Division of Emergency Medicine, Hamilton General Hospital, 237 Barton Street East, Hamilton, ON L8L 2X2; darenlin@gmail.com.

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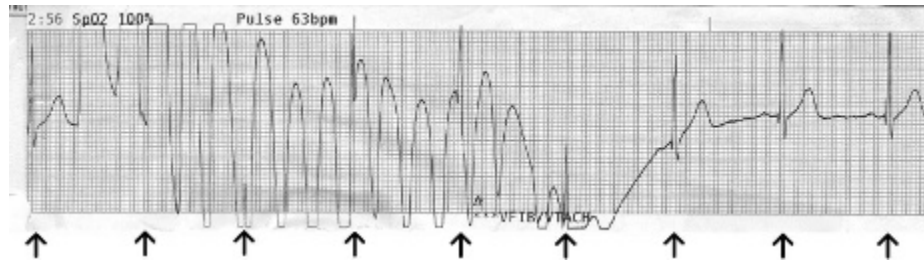


Figure 3. The underlying QRS complexes (*black arrows*) can be seen marching through the lead artifact.

tampering is rarely reported, and only two other cases have been reported in the literature.^{9,10}

Unstable wide-complex tachycardia in the emergency department should be treated according to Advanced Cardiac Life Support protocols. When the clinical presentation does not fit the electrocardiogram, lead artifact should be considered. This diagnostic challenge shows a case in which the patient intentionally manufactured lead artifact to subject himself to invasive procedures, including angiograms and a central line. Although Munchausen syndrome is a diagnosis of exclusion and thus difficult to diagnose in the emergency department, early detection prevents unnecessary invasive interventions and allows appropriate referral for psychiatric assistance.

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REFERENCES

1. Chase C, Brady WJ. Artifactual electrocardiographic change mimicking clinical abnormality on the ECG. *Am J Emerg Med* 2000;18:312-6, doi:[10.1016/S0735-6757\(00\)90126-8](https://doi.org/10.1016/S0735-6757(00)90126-8).
2. Knight BP, Pelosi F, Michaud GF, et al. Physician interpretation of electrocardiographic artifact that mimics ventricular tachycardia. *Am J Med* 2001;110:335-8, doi:[10.1016/S0002-9343\(01\)00627-1](https://doi.org/10.1016/S0002-9343(01)00627-1).
3. Knight BP, Pelosi F, Michaud GF, et al. Clinical consequences of electrocardiographic artifact mimicking ventricular tachycardia. *N Engl J Med* 1999;341:1270-4, doi:[10.1056/NEJM199910213411704](https://doi.org/10.1056/NEJM199910213411704).
4. Huang CY, Shan DE, Lai CH, et al. An accurate electrocardiographic algorithm for differentiation of tremor-induced pseudo-ventricular tachycardia and true ventricular tachycardia. *Int J Cardiol* 2006;111:163-5, doi:[10.1016/j.ijcard.2005.06.017](https://doi.org/10.1016/j.ijcard.2005.06.017).
5. Tarkin JM, Hadjiloizou N, Kaddoura S, et al. Variable presentation of ventricular tachycardia-like electrocardiographic artifacts. *J Electrocardiol* 2010;43:691-3, doi:[10.1016/j.jelectrocard.2009.10.006](https://doi.org/10.1016/j.jelectrocard.2009.10.006).
6. Turner J, Reid S. Munchausen's syndrome. *Lancet* 2002;359:346-9, doi:[10.1016/S0140-6736\(02\)07502-5](https://doi.org/10.1016/S0140-6736(02)07502-5).
7. Asher R. Munchausen's syndrome. *Lancet* 1951;1:339-41, doi:[10.1016/S0140-6736\(51\)92313-6](https://doi.org/10.1016/S0140-6736(51)92313-6).
8. Mehta NJ, Khan IA. Cardiac Munchausen syndrome. *Chest* 2002;122:1649-53, doi:[10.1378/chest.122.5.1649](https://doi.org/10.1378/chest.122.5.1649).
9. Kefalas S, Ezenkwele U. Wide-complex tachycardia as the presenting complaint in a case of malingering. *J Emerg Med* 2006;30:159-61, doi:[10.1016/j.jemermed.2005.09.002](https://doi.org/10.1016/j.jemermed.2005.09.002).
10. Bergethon PR. Factitious ventricular tachycardia. *Ann Intern Med* 1987;107:593-4.

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