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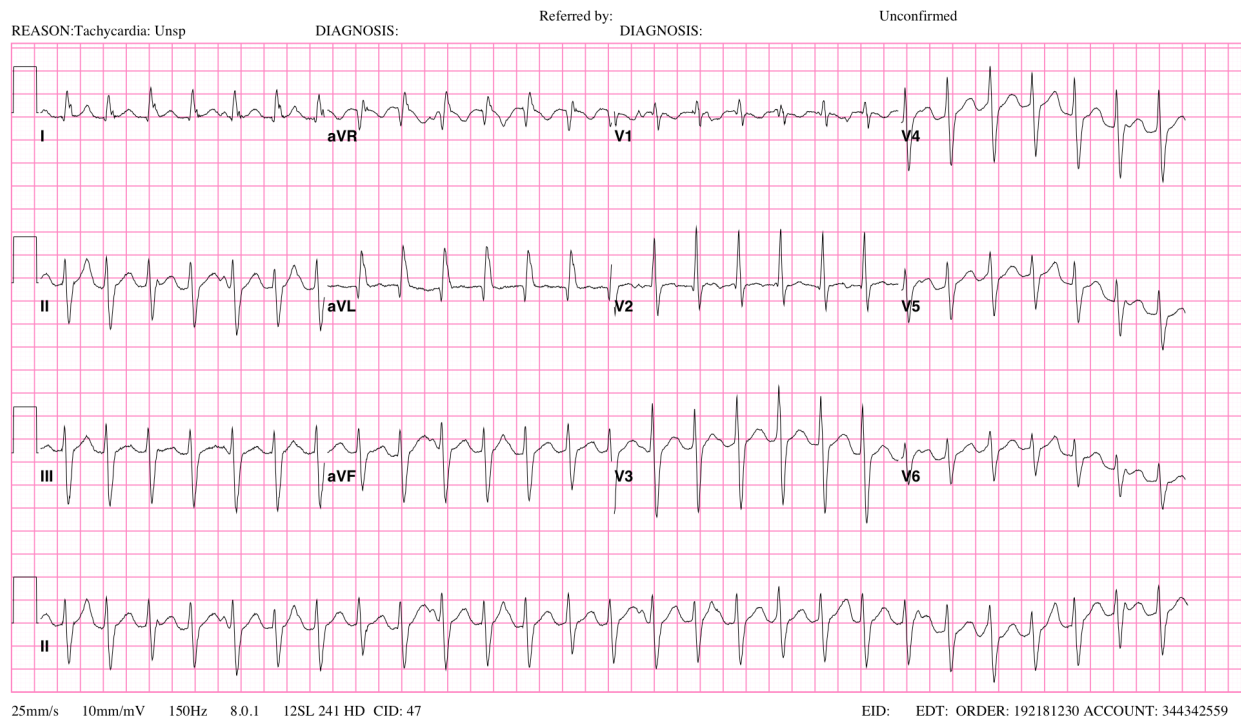
An Unusual Case of Tachycardia

Patient presentation: 26-year-old, Spanish-speaking, female presents with palpitations for the past 24 hours. The patient was transferred to the emergency room from the urgent care center for supraventricular tachycardia (SVT). Patient states she had two episodes of an irregular heart beat in the past. She states that both times she was converted with “medicine” and has never been electrically cardioverted. Patient denies any shortness of breath or chest pain. Pt denies any alcohol or drug use.

- Medical Hx: Tachycardia
- Surgical Hx: None
- Medications: Verapamil 40 mg daily, Depo-Provera IM q3 months
- Allergies: None
- Family Hx: None
- ROS as HPI, otherwise negative

Patient’s initial vitals were: **BP 107/71, HR 170**, T 36.4, RR 16, O₂ sat 100% on room air. Physical exam was negative except for a tachycardic, **regular** rhythm on heart auscultation.

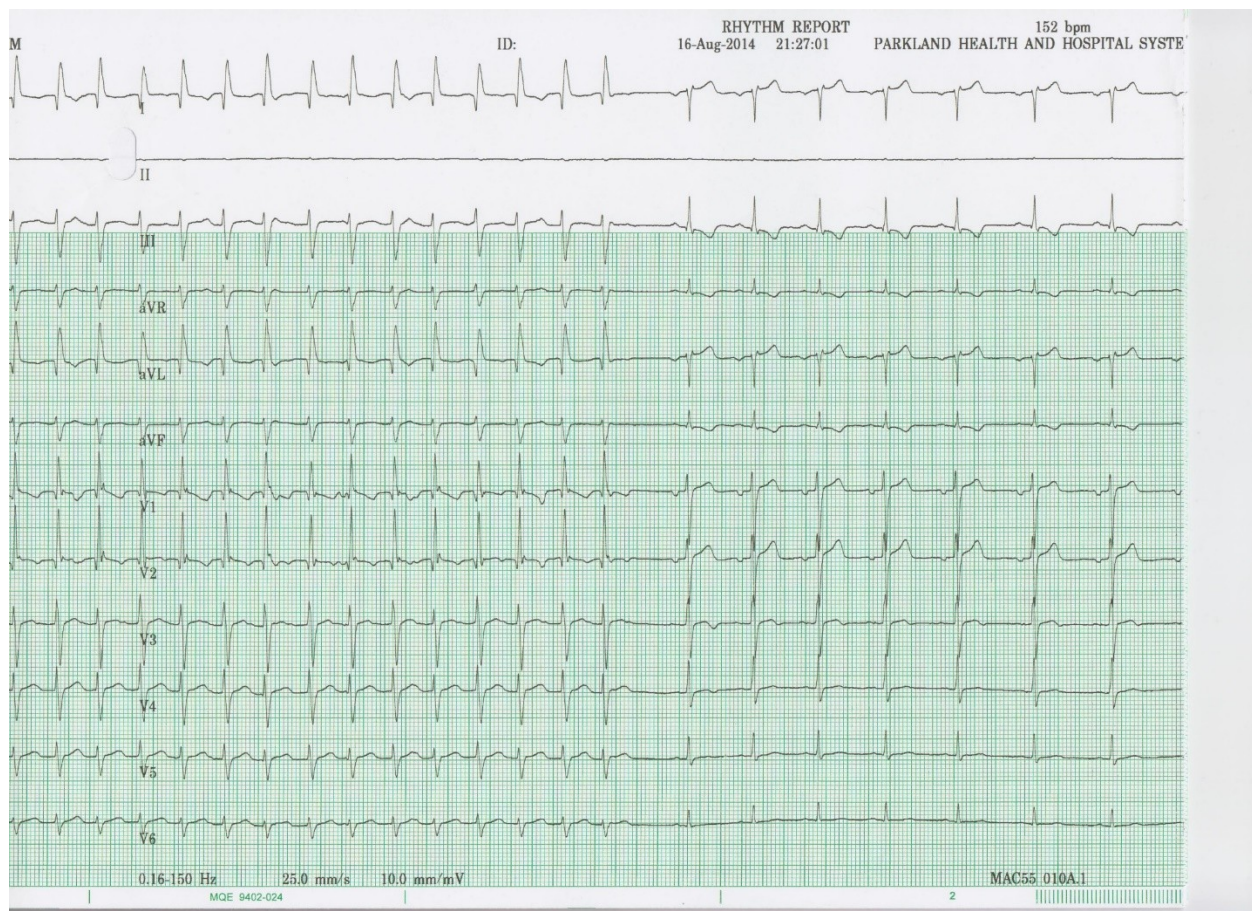
Patient management: The patient was placed in a front room and had defibrillator pads placed on their chest. An EKG was performed:



The patient was initially thought to be in a stable SVT. We first attempted vagal maneuvers by having the patient bear down with no change in rhythm. The patient

was also given a normal saline bolus of two liters. We then gave the patient Adenosine 12 mg rapid push followed by a saline flush. During this time a continuous rhythm strip was running and there was no change in the rhythm. Approximately 5 minutes later a second Adenosine bolus of 18 mg was given, again with no change in the rhythm. At this point, the patient remained stable and so the decision was made to consult our cardiology fellow and perform a thorough chart review.

Upon chart review, it was discovered that the patient had been seen by cardiology and had an electrophysiology study and echocardiogram performed approximately one year prior. At that time, the patient was diagnosed with an **idiopathic fascicular ventricular tachycardia that was sensitive to Verapamil**. Therefore, the case was discussed with the cardiology fellow and the patient was given Verapamil 2.5 mg over 2 minutes while a continuous rhythm strip was running. Within 5 minutes, the patient converted back into normal sinus rhythm (rhythm strip at time of conversion shown below). The patient was then admitted to the cardiology service and monitored on telemetry overnight. She had no further events and was discharged home with a follow-up appointment with cardiology.



Discussion: Idiopathic fascicular ventricular tachycardia (IFVT) is a less common etiology of a relatively narrow complex tachycardia that is often misdiagnosed as SVT. IFVT is a re-entrant tachycardia that generally originates from the

interventricular septum close to the posterior fascicle. 10% of all ventricular tachycardias are IFVT. The typical presentation, approximately 60-80% of the time, is in **males between the ages of 15-40 years old**. Most patients will present with palpitations, but a few have also reported mild dizziness or syncope. Cases generally have no triggering event, but can be triggered by emotional stress, exercise, or catecholamine infusion. The EKG of a patient in IFVT will show a tachycardia with a **relatively wide QRS that is still not wider than 140 msec, a right bundle branch block morphology, and a left axis deviation. P waves may be present intermittently but can also be hidden in the QRS complexes.**

In terms of management, the **re-entrant pathway is below the AV node and therefore Adenosine is not effective in modifying the rhythm**. Also, the pathway has been determined to be very **calcium-dependent**; therefore, **Verapamil 10 mg is the first line therapy in stable patients and electrical cardioversion in unstable patients**. Once the patient is stabilized and successfully converted, the patient will need further cardiac work-up and echocardiogram if this is their first presentation to rule out any structural or valvular lesions that could be causing the tachycardia. The patient can then be managed long-term on Verapamil daily or with an ablation procedure depending on the severity and frequency of symptoms.

Conclusion: This case highlights a typical presentation that had an atypical underlying etiology leading to a different management strategy. This emphasizes the need to perform a thorough evaluation of the EKG as well as a thorough chart review in the stable patient. Our patient at first glance appeared to be in SVT, but on closer evaluation of the EKG was noted to have a relatively wide QRS at 106 msec, a RBBB morphology in V5-V6, a left axis deviation, and p waves seen intermittently throughout the rhythm strip. These EKG clues could have pointed us away from SVT and to develop a broader differential of what was the potential cause of the tachycardia. Also, upon a thorough chart review cardiology and EP study notes were obtained and the patient's underlying rhythm of IFVT had already been determined as well as the recommended treatment that was given previously.

References:

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3. Moreno Reviriego, S. "Idiopathic Fascicular Left Ventricular Tachycardia." *European Society of Cardiology*. ESC Council for Cardiology Practice, 20 Dec. 2010.