



## ECG of the Month

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### ***"Don't Panic, DC is Magic!"***

#### **ABSTRACT**

A 46 year old non-smoking male was referred from a private clinic to our ER with a 1-day history of palpitations and chest pain. The pain was retrosternal, on and off, radiating to both arms. Patient denied nausea, vomiting and syncope. He also denied black stool or dizziness.

He described his palpitations as "fast and irregular". The past medical, surgical and family history were non contributory.

#### **CASE PRESENTATION**

His initial vital signs were:

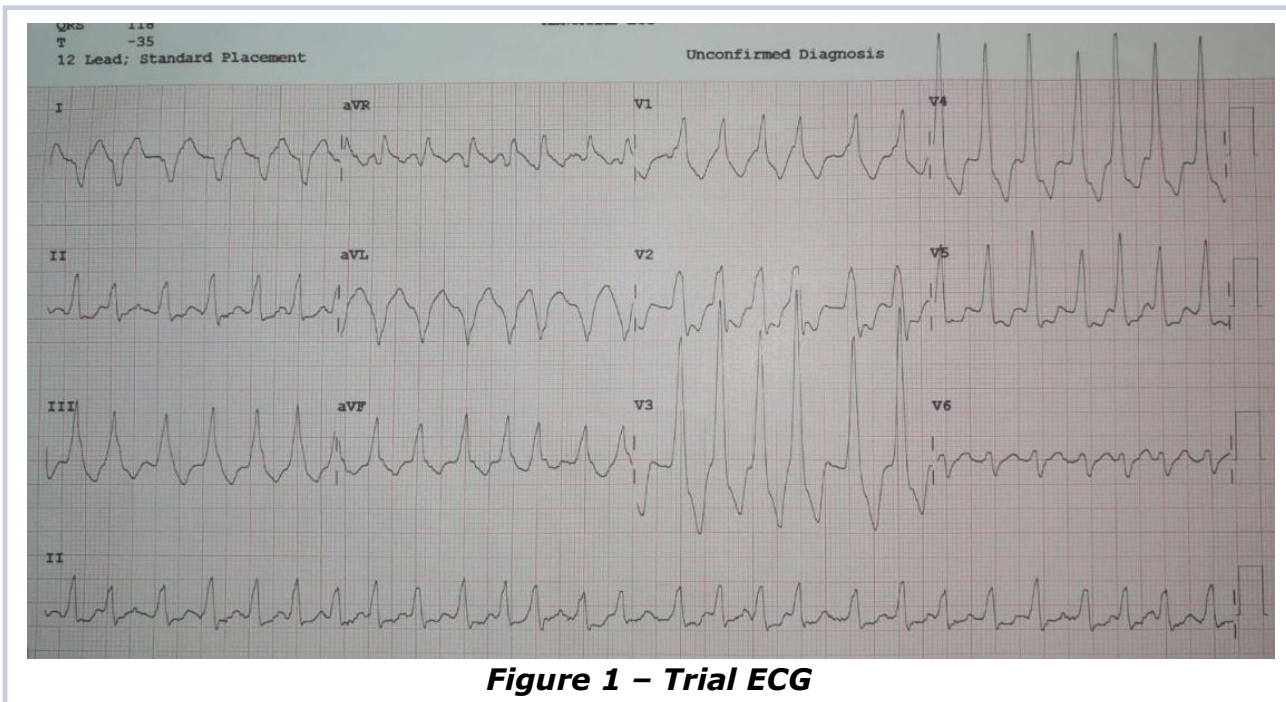
Temperature 37.5°C

Heart Rate: 170 beats per minute, irregular

Respiratory Rate: 20 breaths per minute

Blood Pressure: 120/70 mmHg

SpO2: 99% on Room Air



When looking at the above ECG, we can think of 2 differential diagnoses:

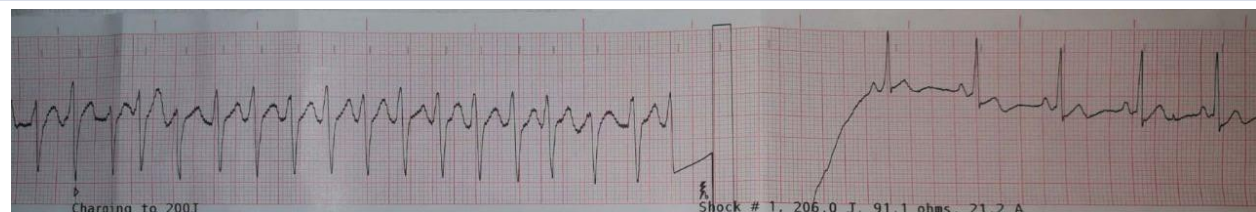
**(A)** Atrial fibrillation (AF) with a pre-excitatory pathway as supported by the tachycardia (R-R interval range from 250 to 300 bpm), the irregularly irregular rhythm and prolonged QRS complexes with different morphologies

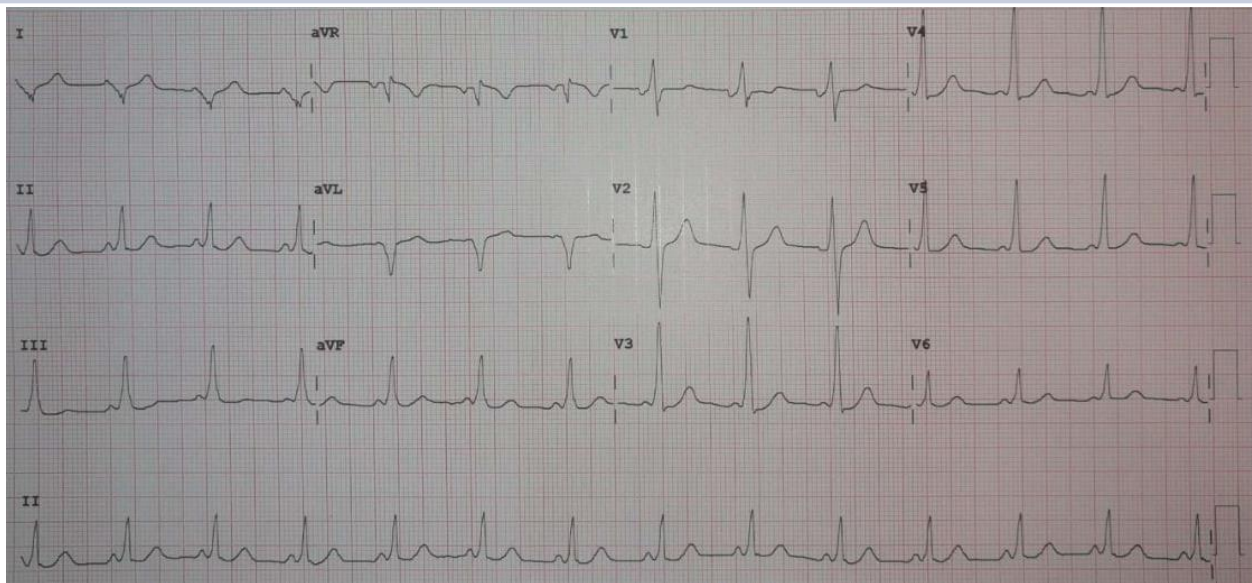
**(B)** Atrial fibrillation with RBBB as supported by tachycardia, irregularly irregular, with prolonged QRS complexes and positive R wave in V1 with RSR' pattern.

The QRS complexes being of different morphologies, along with the rapidity of the heart rate, made us lean towards the diagnosis of Atrial fibrillation with a pre-excitatory pathway.

What did we do? We decided to proceed with synchronized DC cardioversion. Why? SAFETY and EVIDENCE as the pharmacological agent of choice was not available to administer.

Sedation was administered after which 200 JOULES were given to our patient.





**Figure 3 – ECG Post-cardioversion**

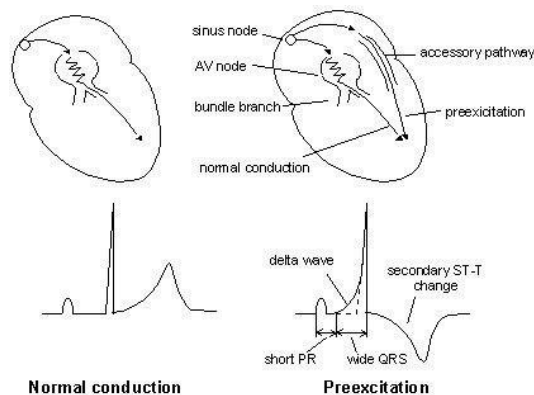
Interpretation of the above ECG:

Sinus rhythm, short PR interval with a delta wave, prolonged QRS complex, right axis deviation and positive R wave in V1 are features in favor of **Wolf Parkinson's white syndrome (WPW) type (A)**

## DISCUSSION

### Atrial fibrillation with WPW

- Wolff-Parkinson-White can present in different ways, one of which is atrial fibrillation. In fact, about 1/5 of patients with WPW present with atrial fibrillation.
- WPW Syndrome is a combination of the presence of a congenital accessory pathway and episodes of tachyarrhythmia.
- In WPW, the accessory pathway is often referred to as the **Bundle of Kent**, or atrioventricular bypass tract.



### Diagnostic Criteria of Atrial Fibrillation with WPW:

- Irregularly irregular rhythm
- Significant tachycardia (rate may approach 250-300 bpm or higher)
- Prolonged QRS Complexes with different morphologies

## MANAGEMENT OF AF WITH WPW

**UNSTABLE patient:** Urgent synchronized DC cardioversion.

In a stable patient, like our patient, the agent of choice would have been procainamide or flecainide, the second choice as equally efficacious is again electricity.

### **Beware:**

In this condition, there are “two highways” running the heart: the physiologic AV node and the accessory pathway, if an AV nodal blocking agent is given, the accessory pathway will take over, potentially increasing the ventricular rate leading to ventricular tachycardia or ventricular fibrillation. Hence, adenosine, calcium channel blockers and beta blockers should NOT be used.

### **What about amiodarone?**

Amiodarone is not recommended because of its AV nodal blocking properties.

## PROGNOSIS

Overall, prognosis is excellent for patients who undergo ablation of the accessory pathway.

## REFERENCES

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