BMJ 2020;368:l6877 doi: 10.1136/bmj.l6877 (Published 23 January 2020)

ENDGAMES

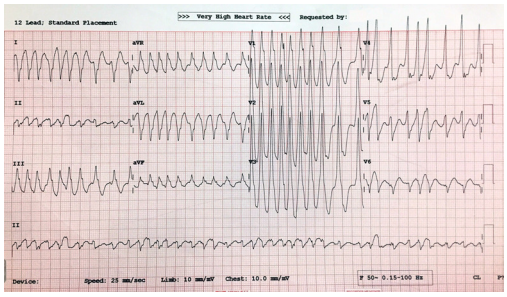
CASE REVIEW

Syncope in a young woman

Krishna Kumar Mohanan Nair *associate professor*, Narayanan Namboodiri *professor*, Ajitkumar Valaparambil *senior grade professor*

Department of Cardiology, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, Kerala, India

A previously well and active 25 year old woman with no underlying structural heart disease presented with recurrent episodes of new onset syncope over a period of six hours. Her pulse was irregularly irregular at a rate of 230 beats/min. She was hypotensive with a blood pressure of 80/60 mm Hg. Twelve lead surface electrocardiogram (ECG) taken on admission is shown in fig 1. She was immediately electrically cardioverted to sinus rhythm with 150 J. She reported no history of recreational drug use or family history of sudden cardiac death.



Surface electrocardiogram during tachycardia

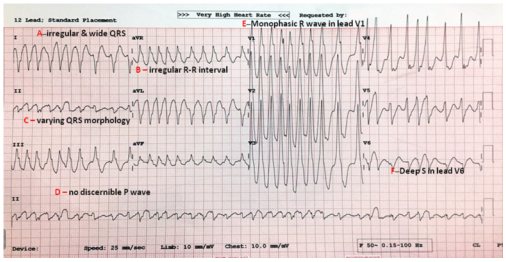
Questions

1. What does the ECG show?
2. What are the differentials of an irregular wide QRS tachycardia with atypical RBBB morphology?
3. What is the most likely diagnosis?

Answers

1.
What does the ECG show?

An irregular wide QRS tachycardia with atypical right bundle branch (RBBB) morphology (fig 2). Atypical RBBB is suggested by the monophasic R wave in V1 (fig 2 E) and deep S wave in V6 (fig 2 F). Throughout the tracing there are also irregular R-R intervals, varying QRS morphologies, and no discernible P waves.



Surface electrocardiogram during tachycardia showing an irregular wide QRS tachycardia (A), irregular R-R intervals (B), varying QRS morphologies (C), no discernible P waves (D), monophasic R wave in V1 (E), and deep S waves in V6 (F)

2.
What are the differentials of an irregular wide QRS tachycardia with atypical RBBB morphology?

QRS complexes with atypical RBBB morphology suggests either atrial fibrillation with ventricular pre-excitation via an accessory pathway, or polymorphic ventricular tachycardia.

3.
What is the most likely diagnosis?

Wolff-Parkinson-White syndrome with pre-excited atrial fibrillation.

The absence of P waves, the wide QRS tachycardia, and the irregular ventricular rate suggest that this is atrial fibrillation with ventricular pre-excitation. Polymorphic ventricular tachycardia is associated with QRS axis twisting and therefore unlikely; however, both can degenerate into ventricular fibrillation, hence immediate restoration of sinus rhythm is the goal of acute therapy.

Rapid irregular ventricular rates with no P waves, varying QRS morphologies and the absence of QRS axis twisting are typical

Correspondence to KKM Nair kakkam@gmail.com

of Wolff-Parkinson-White syndrome with pre-excited atrial fibrillation. Ventricular pre-excitation (when an accessory pathway causes early excitation of the ventricle) with supraventricular tachycardia is characteristic of Wolff-Parkinson-White syndrome.[1] Atrial fibrillation occurs in 20% of people with Wolff-Parkinson-White but atrioventricular re-entrant tachycardia is more common.[2]

Treatment is with catheter based radiofrequency ablation of the accessory pathway.[3 4]

Learning points

Consider Wolff-Parkinson-White syndrome with pre-excited atrial fibrillation when presented with an irregular wide QRS tachycardia, especially in young people.

Patient outcome

The patient underwent successful radiofrequency ablation of the manifest left free wall accessory pathway.[5] She is asymptomatic after six months of follow-up with no recurrence of Wolff-Parkinson-White syndrome or atrial fibrillation.

Competing interests The BMJ has judged that there are no disqualifying financial ties to commercial companies. The authors declare the following other interests: none.

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Patient consent obtained.

Provenance and peer review: not commissioned; externally peer reviewed.

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