

IMPORTANCE OF VECTORCARDIOGRAM IN WOLF-PARKINSON-WHITE DIAGNOSIS



ANDRÉS RICARDO PÉREZ RIERA, MD¹

Chief of the Electro-vectorcardiography Sector
Faculty of Medicine - ABC Foundation Santo André – São Paulo – Brazil

CASE REPORT

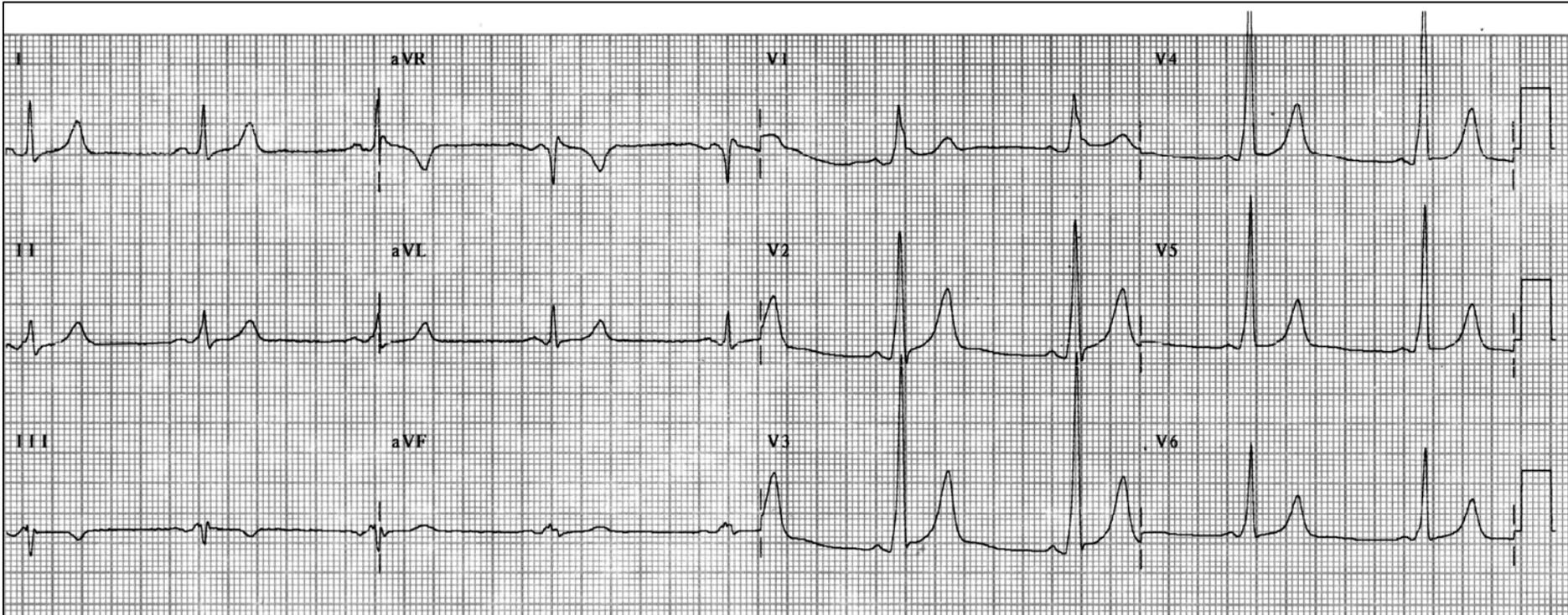
- White, male patient. He is a government's official, with a history of repetitive crises of aborted, rapid, short and regular palpitations (in average 3 to 5 minutes) since his teenhood.
- They occur in average one each 3 to 4 months.
- Over the last 2 years the crises lasted longer, finally needing emergency admissions and intravenous medications.
- Currently using Atenolol 25mg per day. Even so, with such medication, 5 months ago had a last crisis that needed an emergency admission because of its length, and required intravenous medication.
- The palpitations crises never caused a syncope or signs of hemodynamic involvement.
- Nothing of note in his personal or family background.
- Normotensive, normal periodical lab profile, normal echocardiogram

Name: WRS
Weight: 82Kg

Sex: M
Height: 1,70m

Age: 53yo.
Biotype: Normoline

Race: Caucasian
Date: 01/12/2008



Clinical Diagnosis: pre-excitation. WPW type

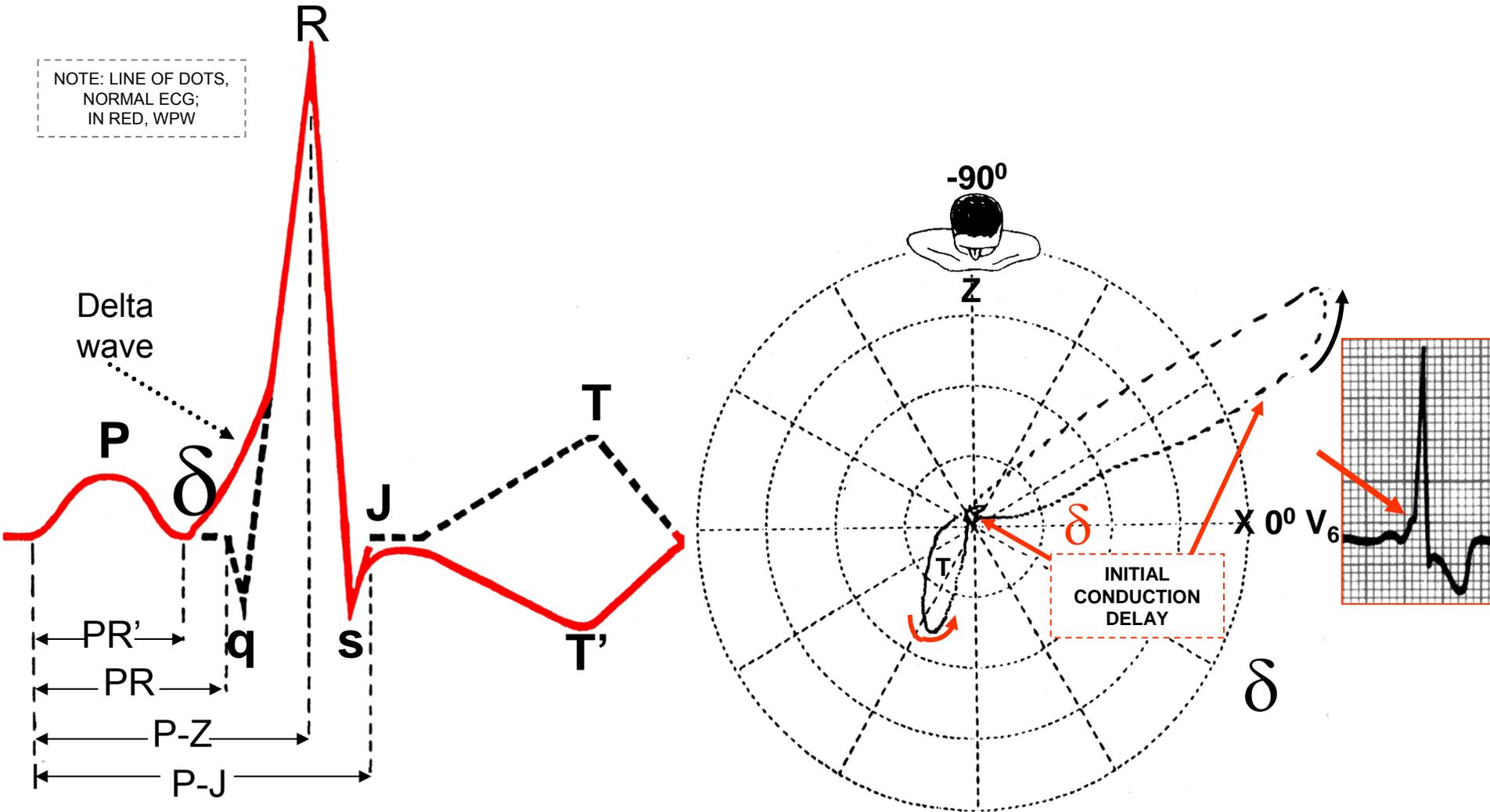
ECG diagnosis: Sinus Rhythm; HR: 52bpm; P axis: $+12^{\circ}$ and to front, PR interval: 135ms, QRSd: 115ms, QRS axis $+30^{\circ}$ delta waves (δ) in several leads, prominent anterior forces (PAF): WPW type A, T axis: $+14^{\circ}$ and to front; QT interval: 469ms; QTc: 436ms.

Conclusion: WPW type A with anomalous accessory pathway bundle located on right posterior segment

WPW ELECTRO-VECTOCARDIOGRAPHIC CRITERIA

- **Short PRi interval:** <120ms in adults and 90ms in children. **Absent in this case (PR=135ms.)**
- **Wider QRS complex:** ≥100 ms 70% of the cases. 30% <100 ms
- **Presence of initial slurring, thickening, or notch at the onset of QRS complex:** DELTA δ wave, duration 30 ms to 60 ms and voltage of up to 5 mm, which corresponds to early depolarization by ventricular mass
 - Unaltered P-J interval (normal): 180 to 260 ms
 - Unaltered P-Z interval (normal): 230 ms (50 to 230 ms)
 - Secondary alterations to ventricular repolarization (ST-T): depending on aberrant depolarization. **Absent in this case (acute QRS/T angle).**
 - Characteristic initial delay of QRS loop in the three VCG planes (Delta loop).

WPW ECG-VCG



PRi or PQ: since the onset of P up to the onset of QRS. It represents the time the stimulus takes to go from the SA node until reaching the ventricles: 120 ms to 200 ms.

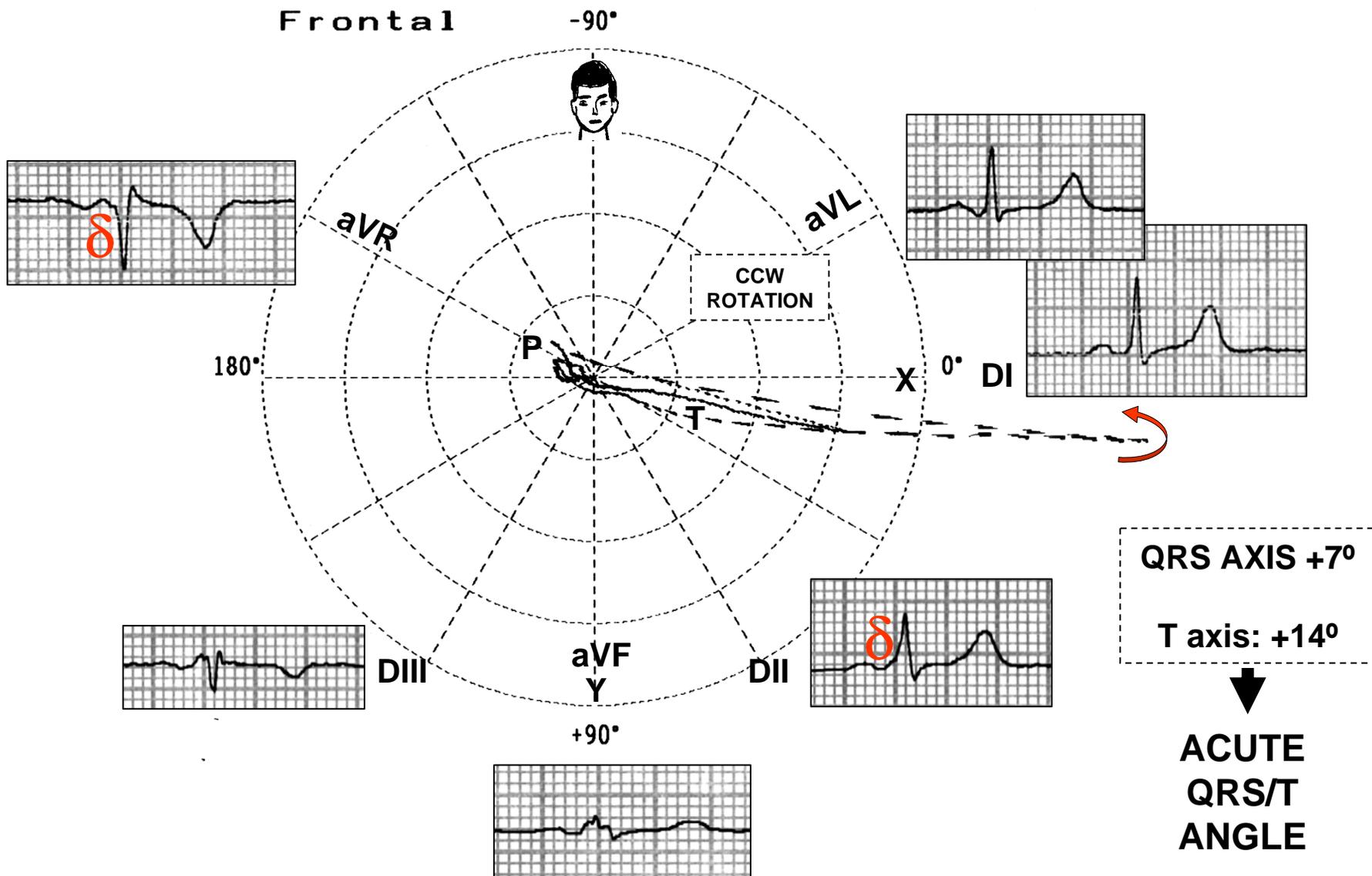
PZ: distance between P wave onset until R apex: 150 to 230 ms.

PJ: distance between P wave onset until j point: 180 to 260 ms.

- **QUESTIONS:**

- Where is located the anomalous accessory pathway?
- What is the best management to follow?

ECG/VCG FRONTAL PLANE CORRELATION

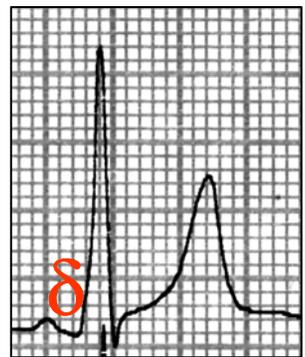
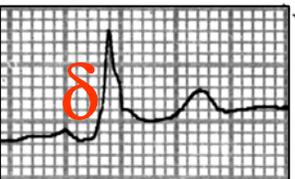
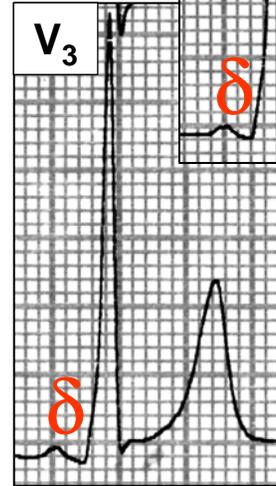
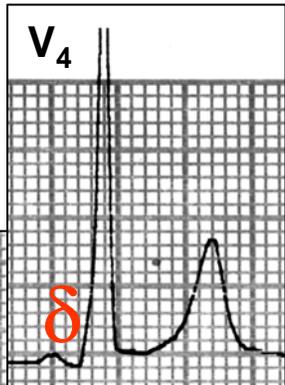
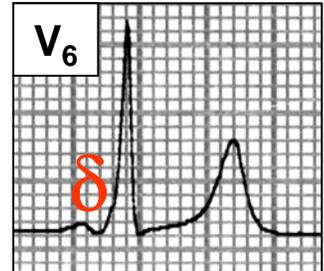
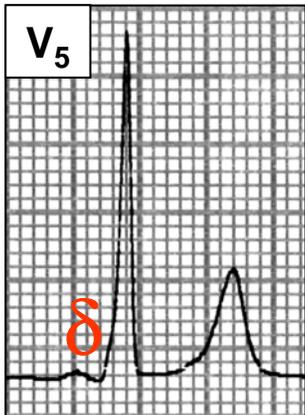
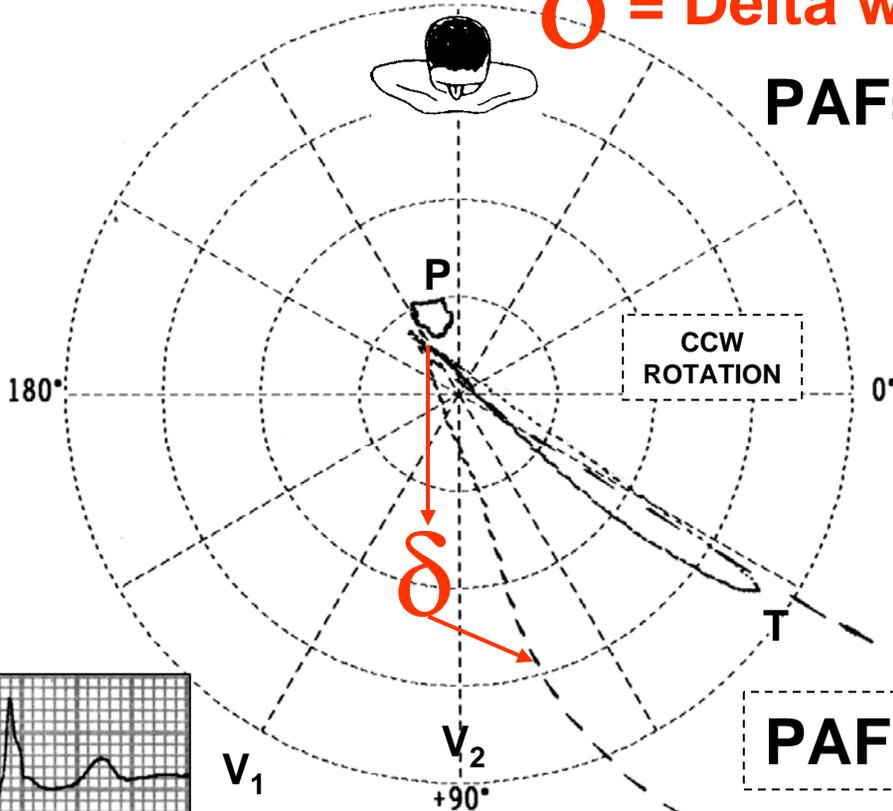


ECG/VCG HORIZONTAL PLANE CORRELATION

Horizontal -90°

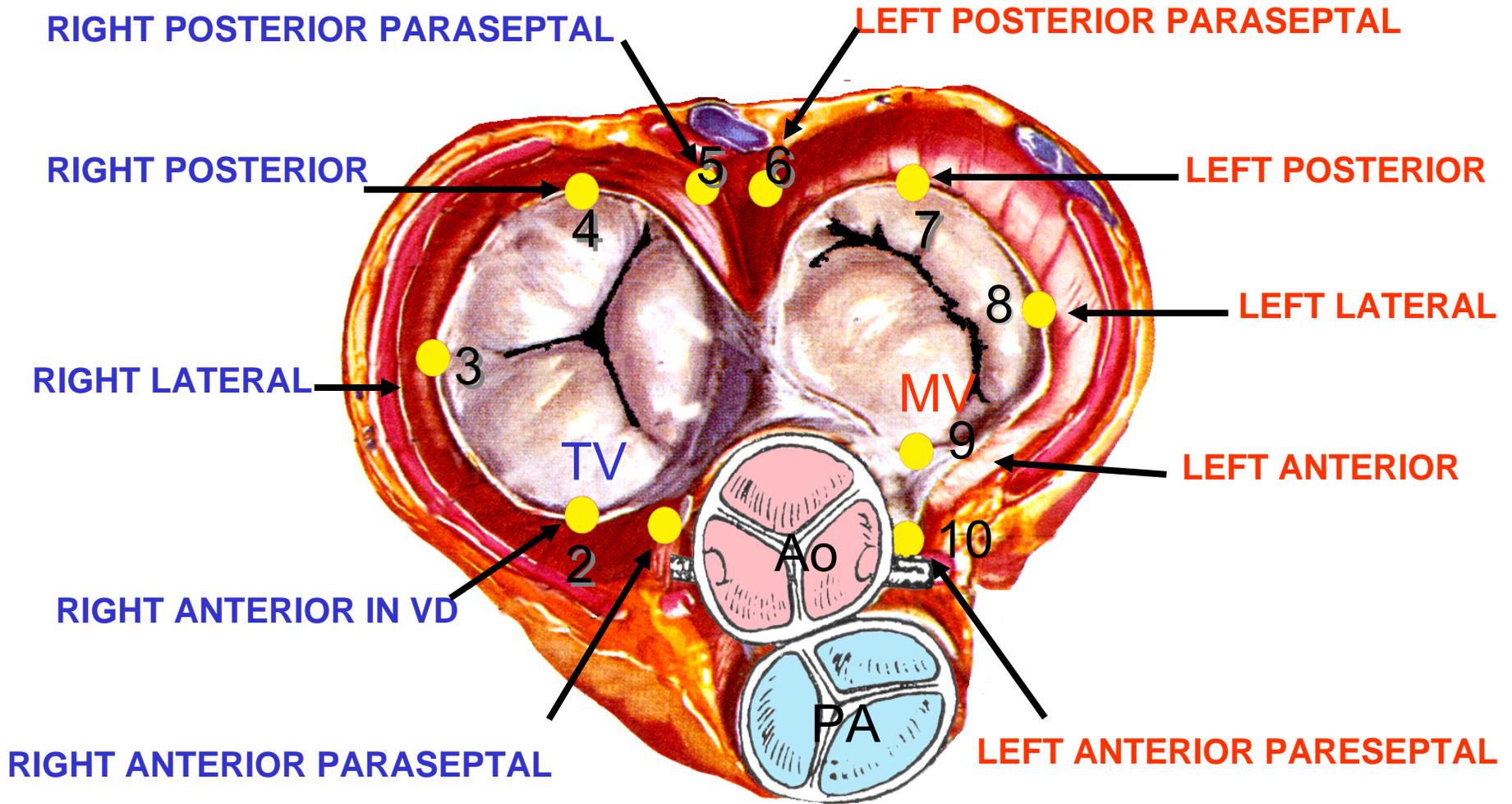
δ = Delta wave: Initial Conduction Delay

PAF= Prominent Anterior Forces

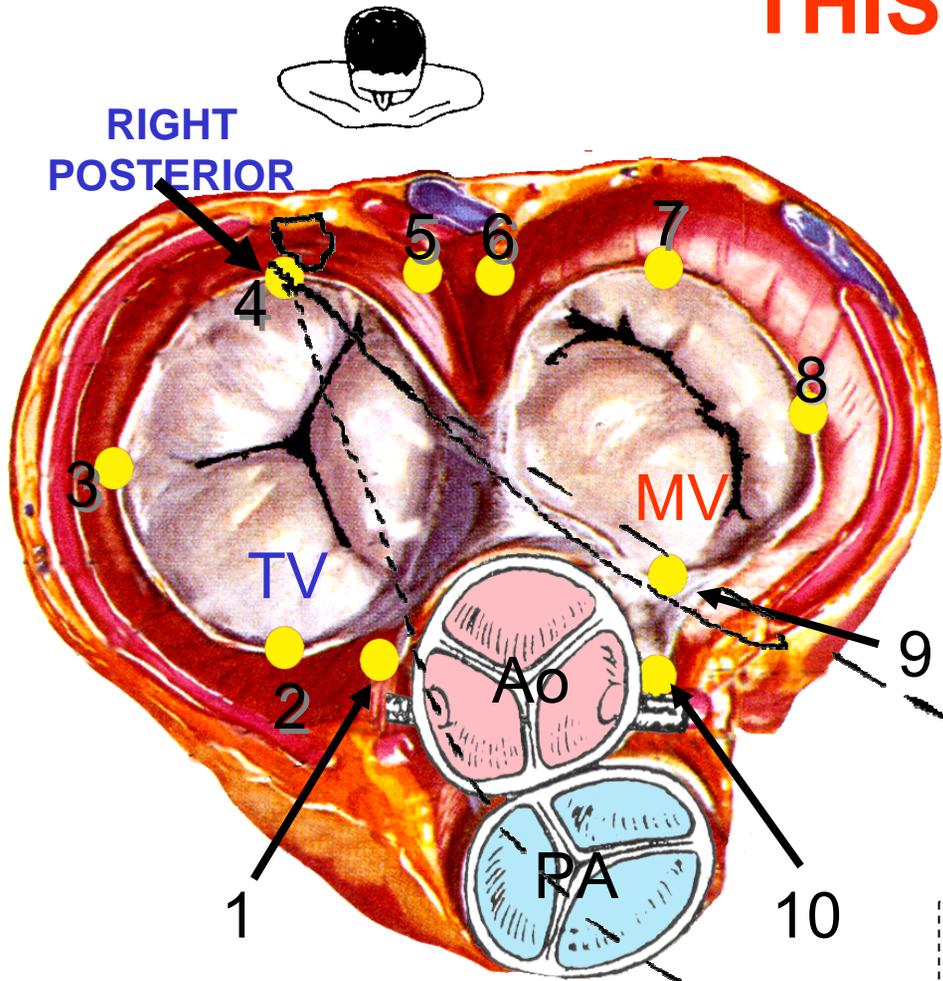


ACUTE QRS/T ANGLE

POSSIBLES LOCATIONS OF ANOMALOUS PATHWAYS IN WPW

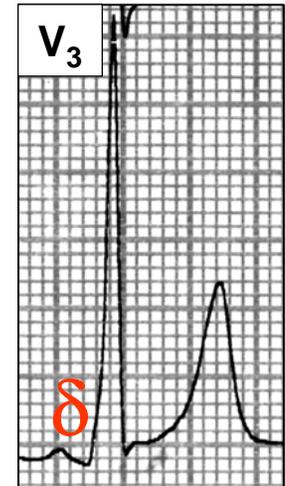


THIS CASE

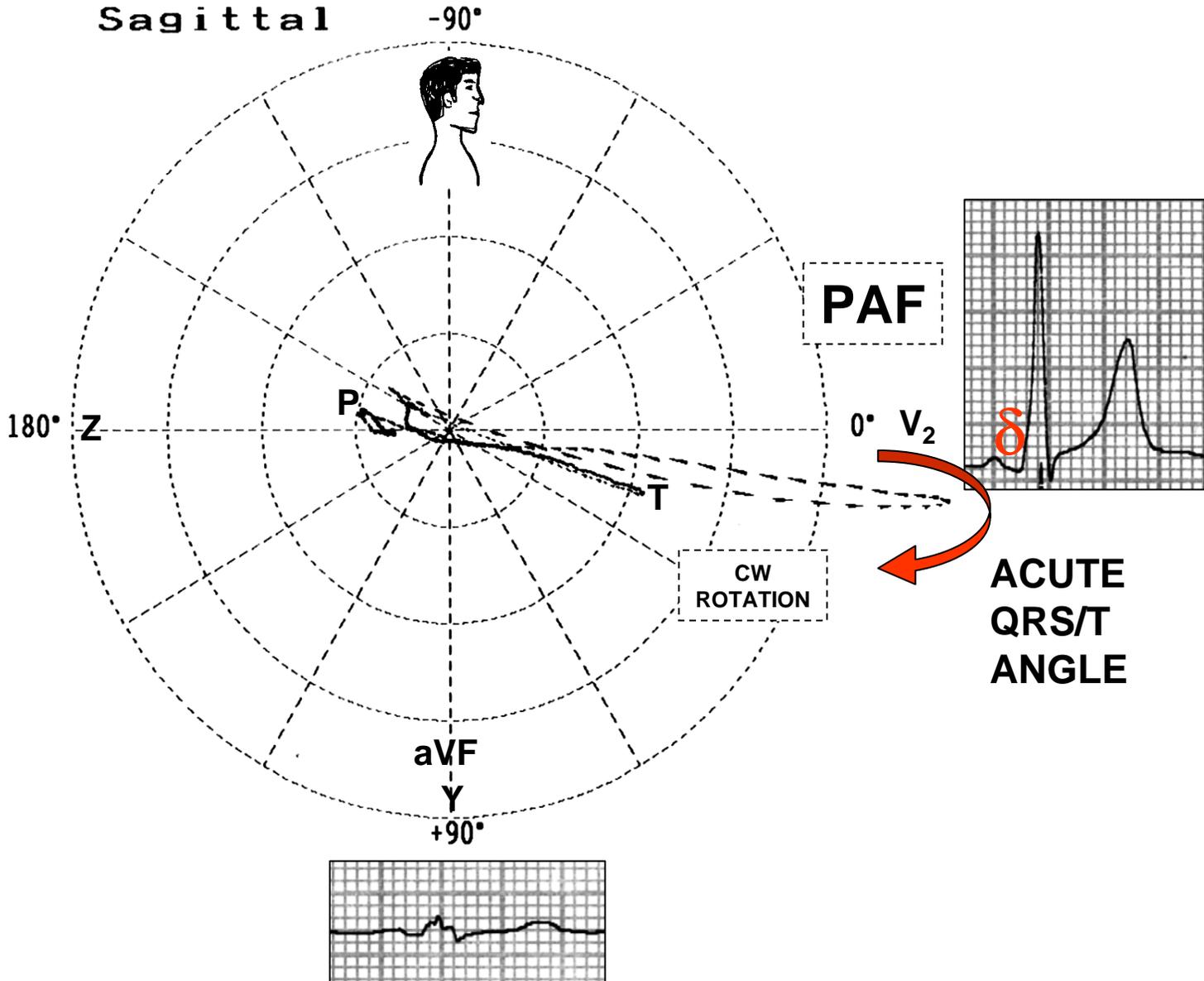


Diagnosis:
Wolf-Parkinson-White type A
Right Posterior pre-excitation
Type II of European Classification
Point 4 of Gallagher
Region IV of Lindsay

PAF



ECG/VCG RIGHT SAGITTAL PLANE CORRELATION

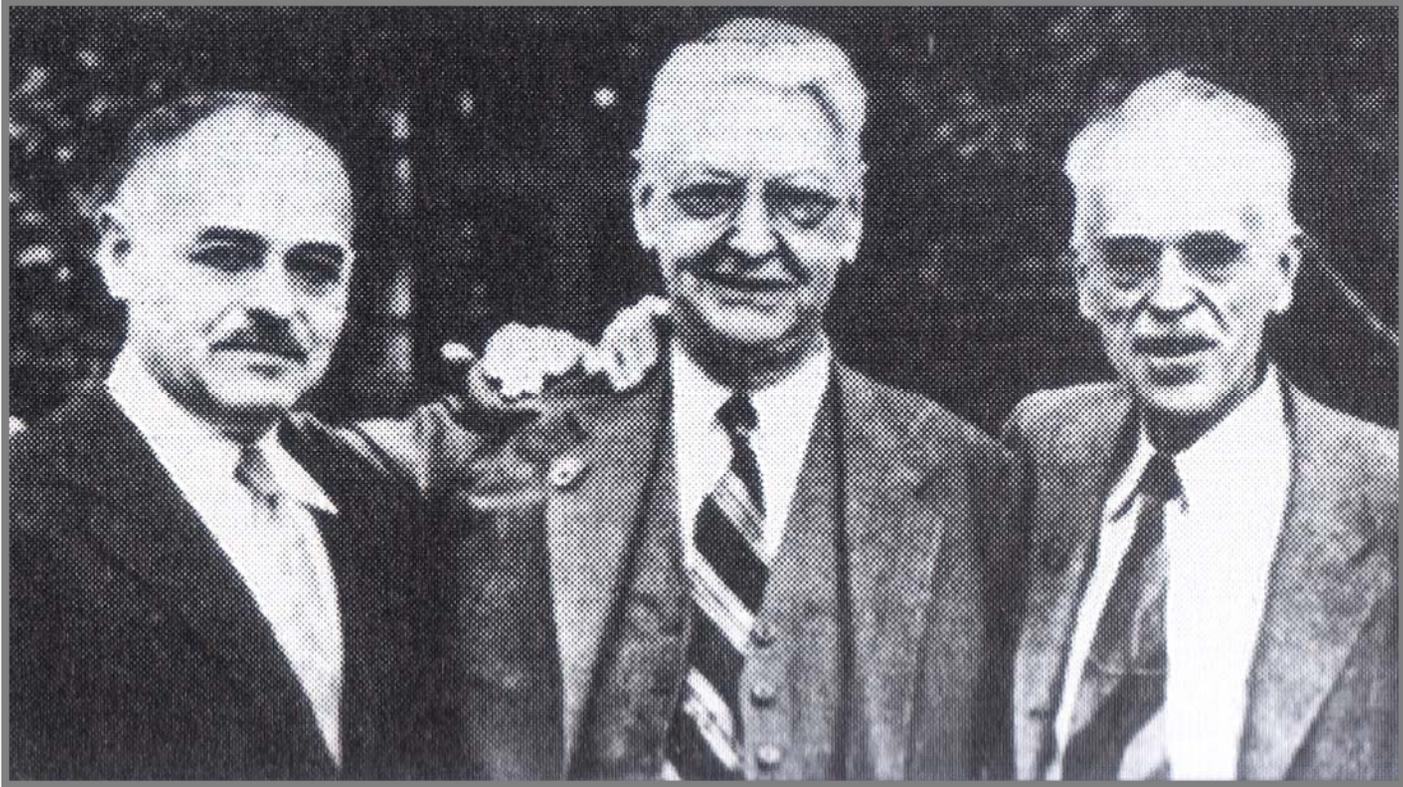


- **QUESTIONS:**

- What is the best management to follow?

- We think that the best management is **RadioFrequency Catheter Ablation (RFCA)**
 - RFCA of the accessory pathway cures WPW syndrome, eliminating tachyarrhythmic events in most instances.

HISTORICAL MEMORIES



Dr. White introduced Dr. Wolff to Dr. Parkinson in Boston. Dr. Parkinson had just attended the second World Congress of Cardiology (Washington, DC 1950) and he visited Dr. White in Boston at the Massachusetts General Hospital.

W. Proctor Harvey, M. D. *Cardiac Pearls*. Laennec Publisher, 1993. Page 196. Figure 169 (*American Journal of Cardiology*).

Wolff L, Parkinson J, White PD. Bundle branch block with short P-R interval in healthy young people prone to paroxysmal tachycardia. *Am Heart J* 1930;5:685.