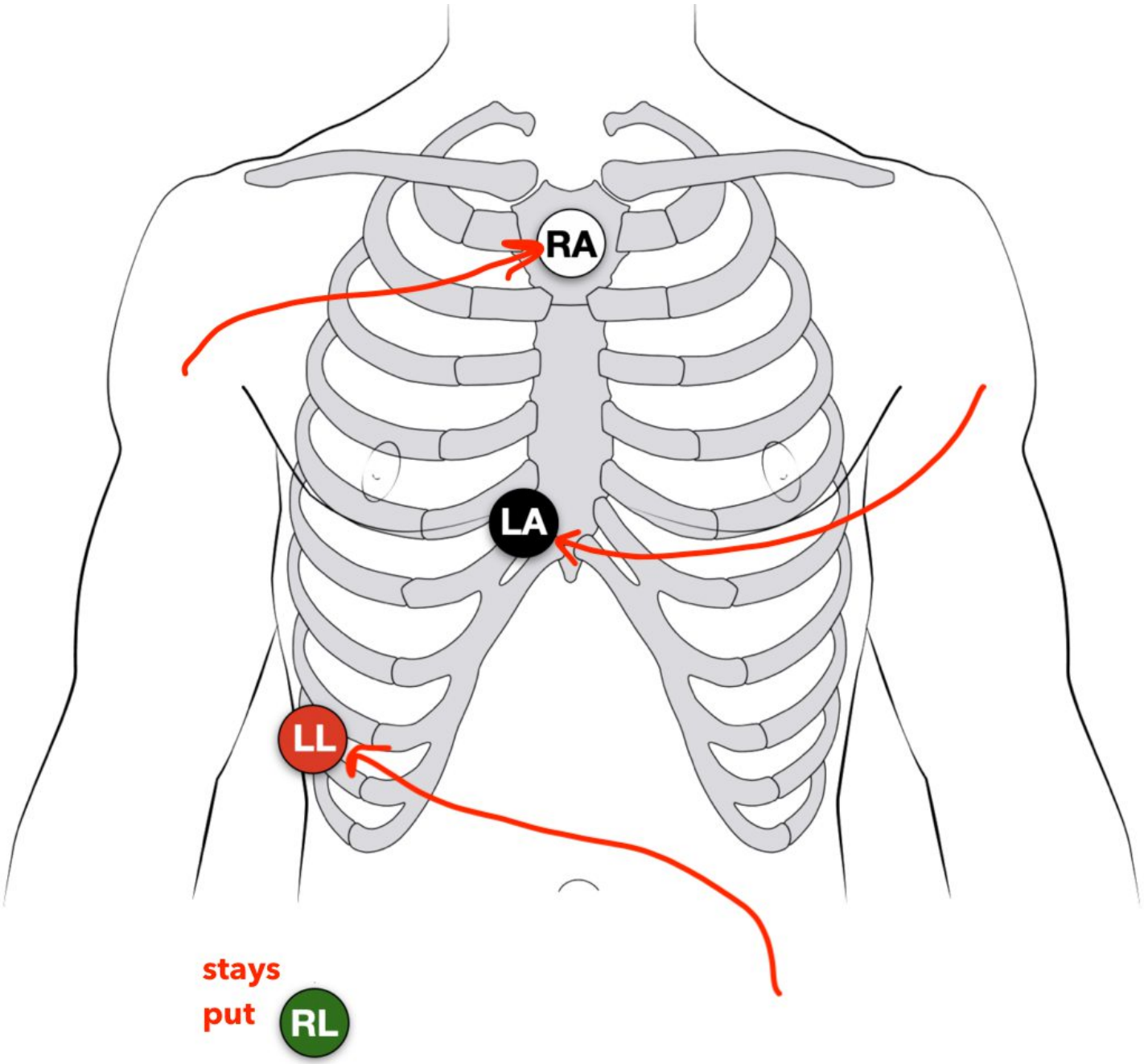
Lewis Lead

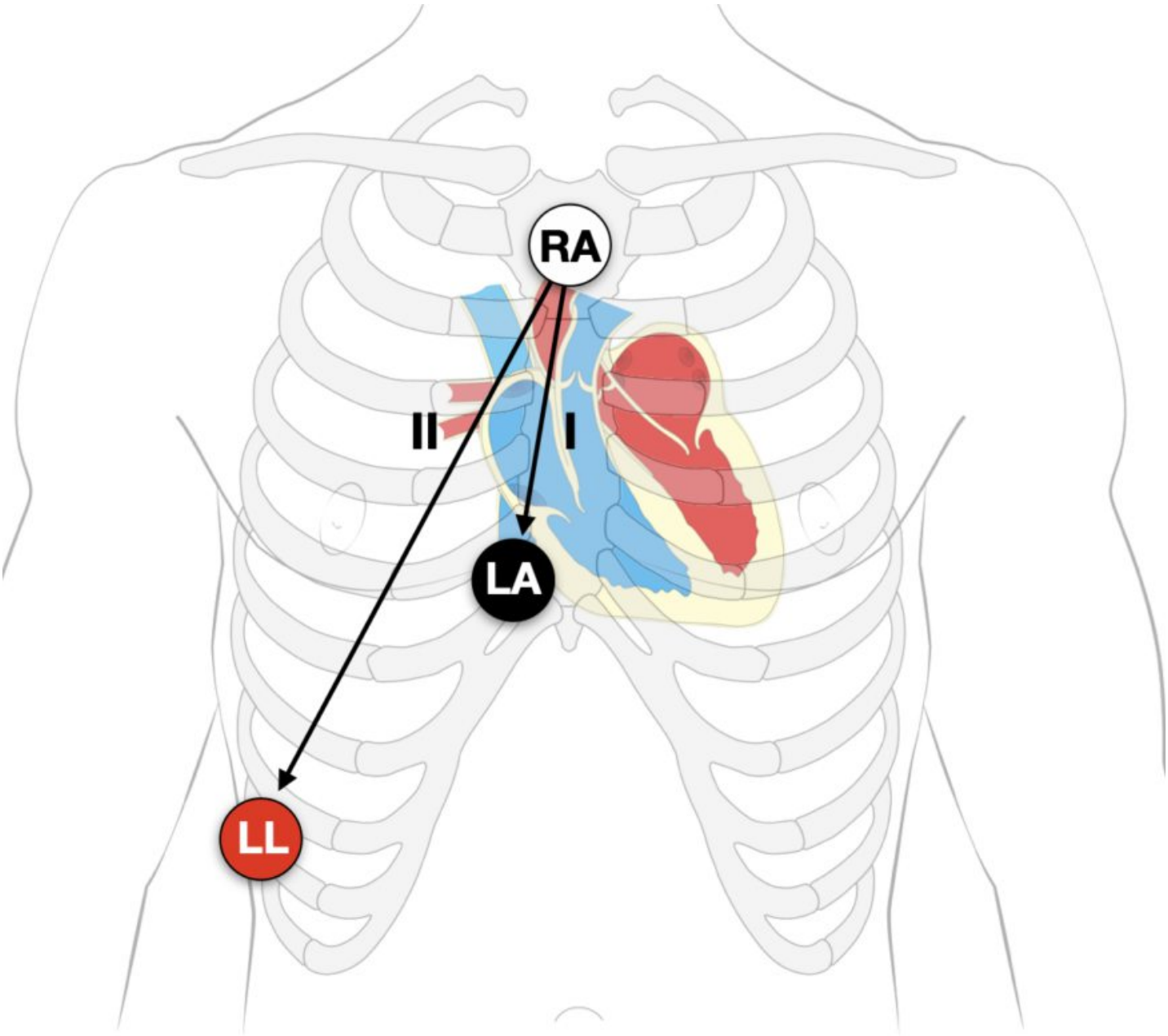
The Lewis lead configuration (S5-lead placement) is used to better detect atrial activity in relation to that of the ventricles.

- Right Arm (**RA**) electrode on manubrium
- Left Arm (**LA**) electrode over 5th ICS, right sternal border.
- Left Leg (**LL**) electrode over right lower costal margin.
- **Monitor Lead I or II**

*Note: Increasing **calibration from 10 to 20mm/mV**; and **paper speed from 25 to 50mm/s** can further amplify the atrial activity.*



Lewis lead (S5-lead) placement

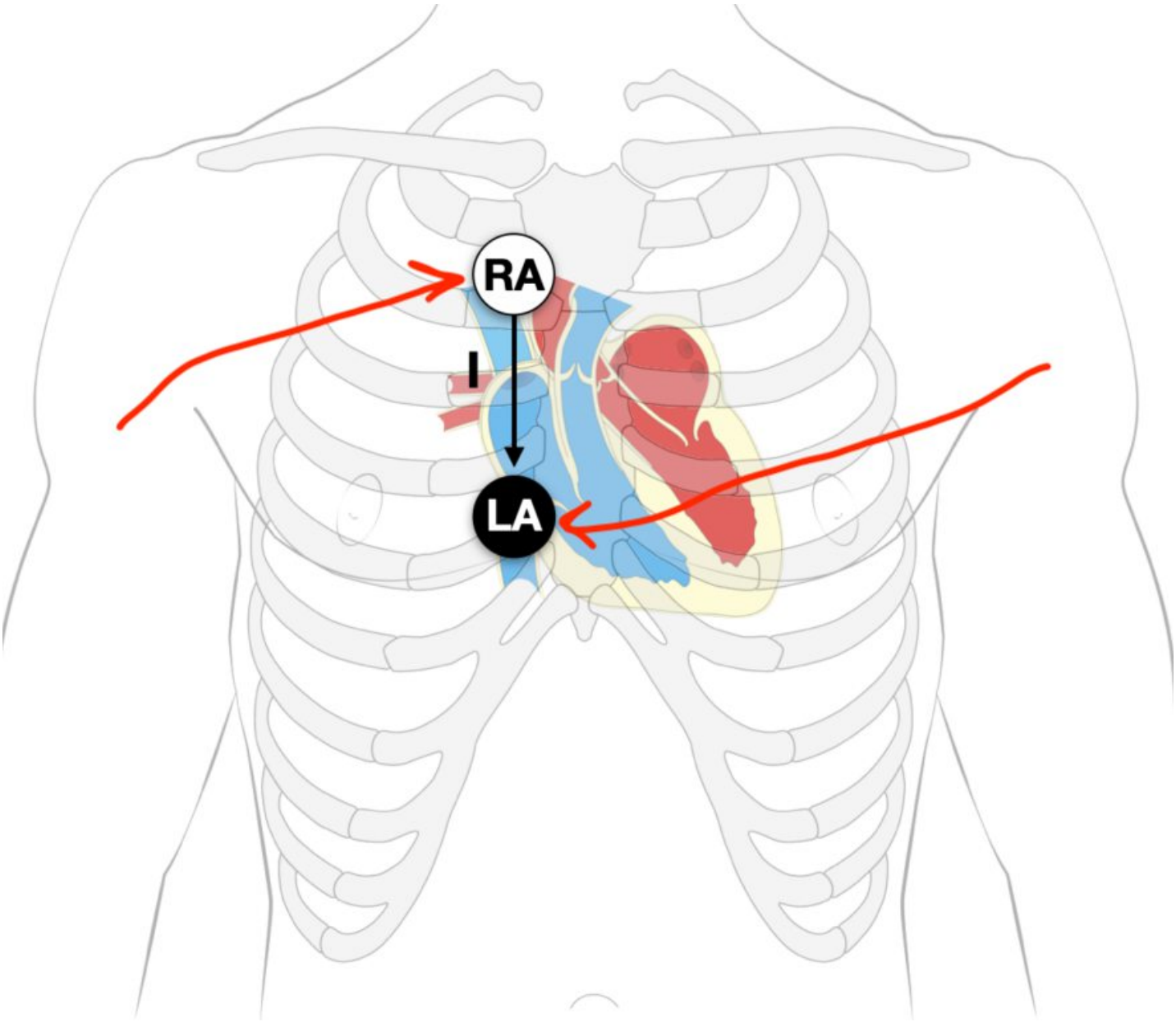


Lewis lead (S5-lead) placement

Alternate lead positions

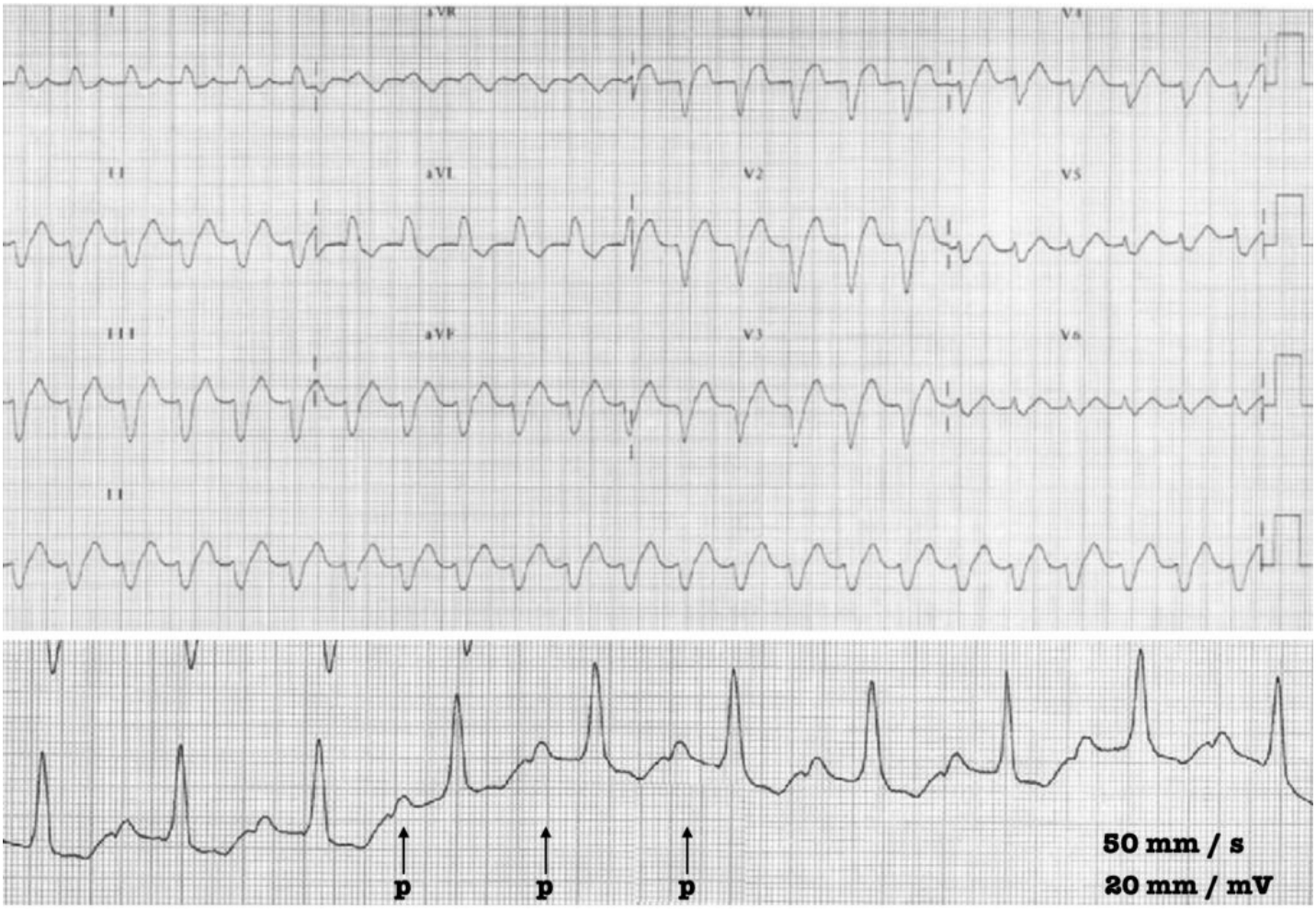
Alternate placements based on interpretation of the original diagram exist. The most common (as well as simple and rapid to employ) is to change the RA and LA lead only, and monitor lead I:

- Right Arm (**RA**) electrode to the right of the sternum at the second intercostal space
- Left Arm (**LA**) electrode over 4th ICS just to the right of the sternal border
- **Monitor Lead I**



Clinical examples

Example 1

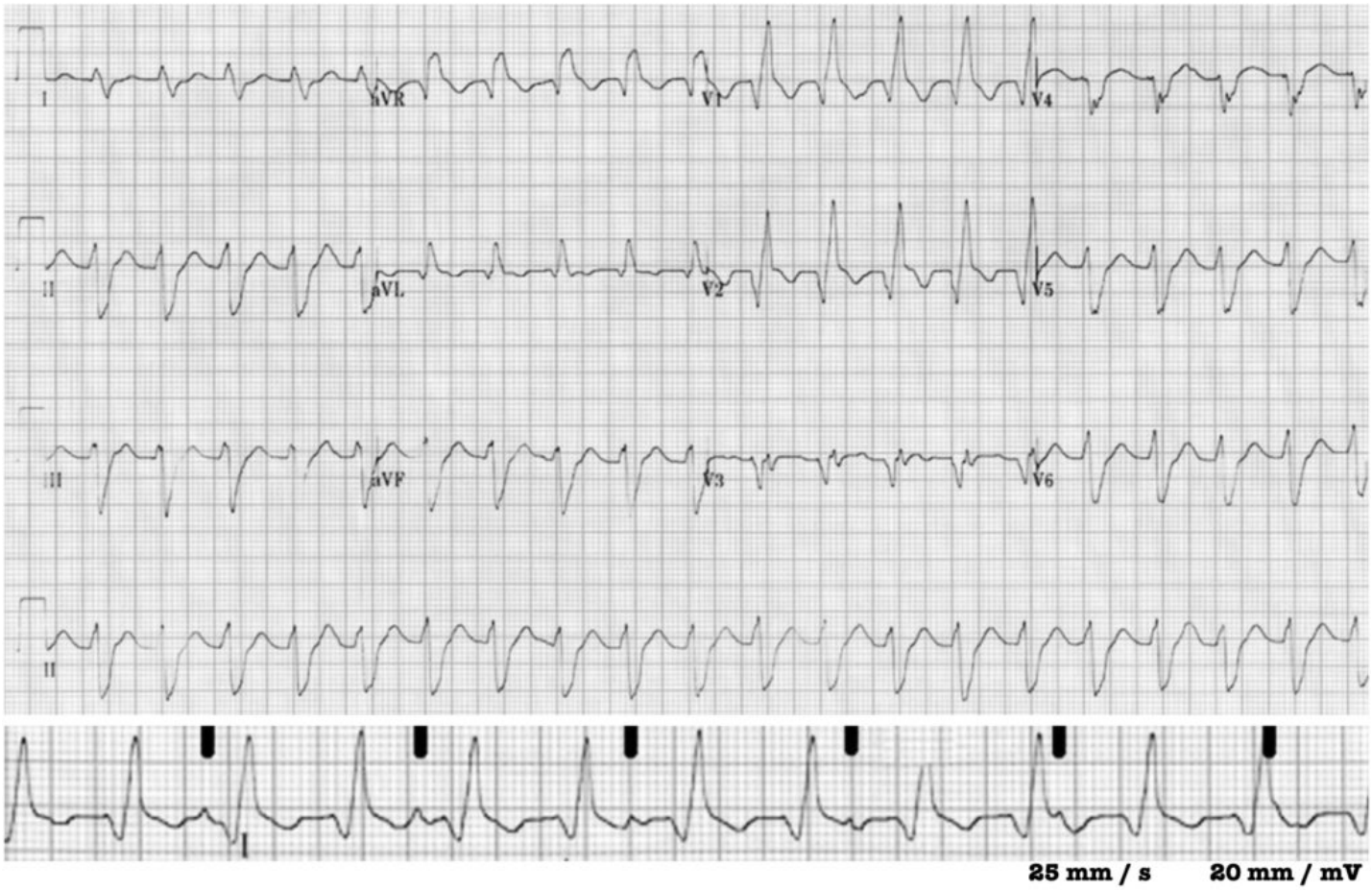


Lewis lead in wide complex tachycardia. [Holanda-Miranda 2012]

12-lead ECG: showing a wide QRS tachycardia.

Lead I strip: Lewis lead obtained with a paper speed of 50 mm/s and twice normal calibration at 20mm/mV. Regular P waves can now be clearly identified.

Example 2



Lewis lead in Wide QRS Complex Tachycardia. Bakker et al 2009

12 lead ECG: showing a regular broad complex tachycardia of 120 bpm.

Lead I strip: Lewis lead configuration amplifies the P waves in the lead I strip. Atrioventricular dissociation is revealed, confirming the diagnosis of ventricular tachycardia (VT).

P waves (reflecting atrial activity) are usually much less apparent than ventricular activity. The Lewis lead can be of value in amplifying these waves, allowing:

- visualisation of flutter waves in atrial flutter;
- clarifying the mechanism of an atrial arrhythmia;
- detecting P waves in wide complex tachyarrhythmias to identify atrioventricular dissociation
- detect the type of ventriculoatrial conduction during ventricular pacing