

## Student's Corner

### Become a Sherlock Holmes in ECG

M Chenniappan<sup>1</sup>

#### Series 8 :

#### “Confusion of Colours”

Routine ECG of 68 years old Male.

#### Questions :

- (1) What are the ECG findings?
- (2) Why is this Clue?
- (3) What are the Practical Implications?

#### Answers :

##### (1) ECG FINDINGS :

This ECG shows sinus rhythm with left anterior fascicular block (LAFB) and PR interval in the upper limit. There is sudden appearance of Tall R wave in V3 (>V4) and sudden disappearance of R wave in V5. In V5 and V6 QRS complex is looking completely different. The unexpected appearance of R wave in one lead and sudden disappearance of R wave in another lead are suggestive of chest electrode malposition. Here electrode of V5 is placed in V3 position and electrode for V3 is placed in V5 position resulting in this unusual appearance and disappearance of R wave. This type of ECG change cannot be explained by electrocardiographic terms because the configuration of QRS in V5 and V6 is most often similar in normal ECG.

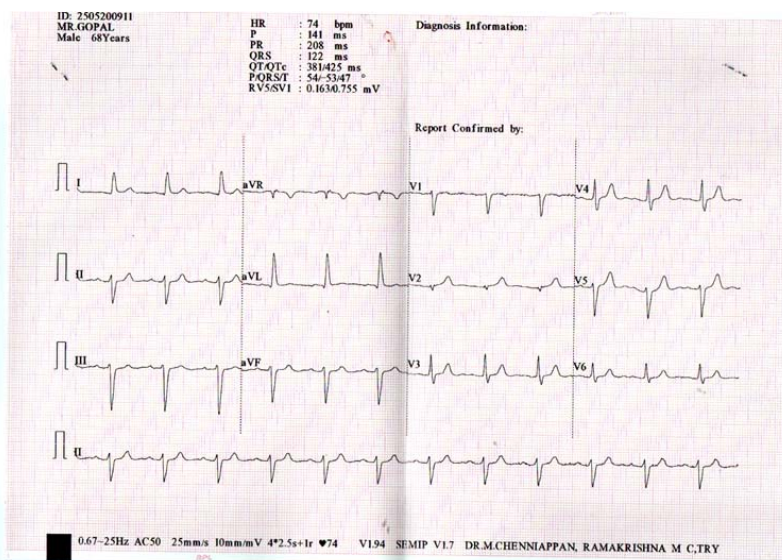
##### (2) CLUE :

The ECG technicians most often do the error of misplacing electrodes either in limb leads or in the chest leads. To avoid this error chest electrodes are given in particular colours. So that the technician remembers the particular colours for the specific electrode and place it in a correct place. The colours for the chest electrodes are

- V1 - Red
- V2 - Yellow
- V3 - Green
- V4 - Brown
- V5 - Orange
- V6 - Purple

These colours can be remembered easily by the following method.

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Electrodes V1 – V3 remember traffic signals (Red, Yellow, Green)

Electrodes V4-V6 remember the pneumonic “BOP” (Brown, Orange, Purple).

In this simple way technicians can identify the chest electrodes and place it in the correct place without looking at the letter in the electrode like V1, V2, etc. In this ECG, orange is placed in Green position and Green is placed in orange position resulting in abnormal QRS complexes in V3 and V5. That is why the clue of “Confusion of Colours” is given.

##### (3) PRACTICAL IMPLICATIONS :

Correct ECG recording is an essential prerequisite for the right interpretation of Electrocardiogram. So, the ECG technician/paramedics who record the ECG should be taught how to connect the electrodes in the limbs as well as how to place chest electrodes in the correct positions. Most often technicians make error because they do not look at the name of the letters inscribed on that particular electrode and in a hurry, they misplace the chest electrodes. If they are taught the positioning of the chest electrodes as well as the limb electrodes through the colours it is easy for them to place the electrodes in a correct position. Some of this wrongly recorded ECGs may give a wrong diagnosis like dextrocardia, Myocardial Infarction, Ventricular enlargement etc and the patient may get inappropriate and incorrect treatment. So, educating the technicians in a simple way through colour coding of electrodes is an efficient method of making sure that the ECG is recorded properly.