

Student's Corner

Become a Sherlock Holmes in ECG

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Series 4 :

“Looks Similar but not Similar”

This is the routine ECG of 78 years old patient with no specific complaints.

Questions :

- (1) Describe ECG changes
- (2) Why is this clue?
- (3) What are practical implications?

ECG Findings:

ECG shows basic sinus rhythm with frequent ventricular ectopic beats. Sinus beat shows Left Anterior Fascicular block (LAFB- terminal r in aVR). These ventricular ectopic beats have pattern of Right Bundle Branch Block (RBBB) and LAFB indicating the site of origin is Left Posterior Fascicle (LPF). These are not escape beats as they come before the next expected sinus beat ;you can see the non-conducted sinus P in ST segment of first VPD. These ventricular ectopics also occur in couplets with long R-R intervals. Usually in this ECG the common diagnosis is likely to be frequent ventricular “extra” systoles with couplets with long inter ectopic intervals. The usual couplets of ventricular extra systoles commonly have very short inter ectopic interval. There are some peculiar findings of these ventricular ectopics:

- (a) As mentioned above couplets with long inter ectopic interval
- (b) The longest inter ectopic interval is the multiple of shorter inter ectopic interval (shorter inter ectopic interval between second and third beats – 16 small squares ; The longest inter ectopic interval between third and fifth beats – 48 small squares)
- (c) There is slight variation in coupling interval especially the last sinus beat-ventricular ectopic coupling interval.

These findings are suggestive of “para” systoles rather than “extra” systoles.

The differences between Ventricular extra systoles and

Para systoles are shown in Table 1 ,105:

Table 1	
Ventricular extra systole	Ventricular para systoles
Other than sinus	Alongside sinus
Constant coupling interval	Varying coupling interval
Couples with short RR interval	Couplets with long RR interval
No entrance and exit block	Entrance and exit blocks are present
No relation between shortest inter ectopic interval and longest inter ectopic interval	Longest inter ectopic interval is the multiple of shortest inter ectopic interval
Fusion beats are rare	Fusion beats are frequent

The Clue :

The ventricular ectopics in this ECG look similar to ventricular extra systoles but as explained above they are not ventricular extra systoles but ventricular para systoles , that is why the clue of “Looks similar but not similar” is given. The 3 classical ECG findings are shown in Fig.1,105.

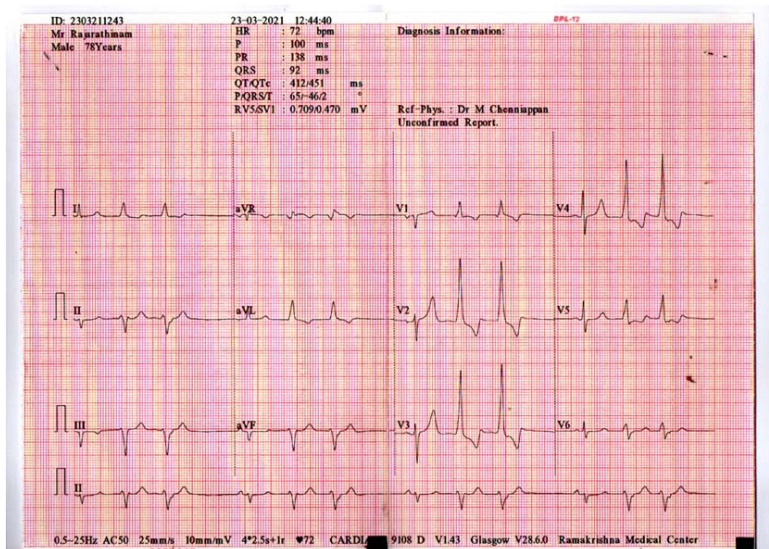


Fig 1

Practical Implications :

As para systoles have entrance block it is difficult to control them because anti arrhythmic drugs may not be able to penetrate entrance block and suppress it. Because of exit block the real frequency of para systoles is under estimated. The underestimation is due to the continuous impulse production from the para systolic focus which is not seen in ECG because of exit block. These two findings of para systoles make it more dangerous than ventricular extra systoles.

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