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Recording and Reading a Normal ECG

Practical 06 / Supervised clinical examination

Aim

Acquire a supervised resting ECG and interpret the calibration, rate, rhythm and basic intervals.

Principle

An ECG records electrical potential differences. Misplaced leads and motion can imitate abnormal findings.

Materials and Requirements

- ECG trainer or approved ECG recorder
- Electrode placement diagram
- Teaching trace with grid and calibration

Procedure

1. Confirm identity, privacy and consent. Check tracing speed and gain and place standard leads using the device diagram and instructor guidance.
2. Ask the volunteer to rest and keep the limb and chest electrode sites accessible with privacy preserved. Prepare dry contact areas and check that each cable label matches the assigned site.
3. On the trainer place V1 in the fourth intercostal space at the right sternal border and V2 at the same level on the left. Place V4 in the fifth left intercostal space on the midclavicular line, then set V3 halfway between V2 and V4.
4. Keep V5 and V6 on the same horizontal level as V4. Place V5 on the left anterior axillary line and V6 on the left midaxillary line. Check the limb electrodes against the cable labels before recording.

Continue with step 5 on the next page.

Procedure Continued

Recording and Reading a Normal ECG

5. Acquire an artefact-free tracing and verify correct lead labels. Record posture and time.
6. Check that the printed calibration matches the device settings, typically 25 mm/s and 10 mm/mV. Inspect the tracing for baseline drift, muscle interference, detached leads and incorrect placement.
7. Assess rate and regularity, then look for one P wave before each QRS with a consistent PR interval in an appropriate lead.
8. Use the large-square method for a regular rhythm or count complexes over a known strip duration for an irregular trace. Examine several beats in a lead with clear P waves.
9. Measure PR and QRS duration and document a structured rate, rhythm and interval summary.
10. Measure PR from P onset to QRS onset and QRS from its first to last deflection. Record paper speed, gain and measured durations, and review uncertain findings with the instructor.

Precautions

- Use privacy and a chaperone where appropriate.
- Distinguish artefact from genuine variation and ask the supervisor to review an unexpected trace.

Observations and Interpretation

Recording and Reading a Normal ECG

Observations and Record

Item	What to record	What it tells you
Calibration	Paper speed and gain	Required for time and amplitude
Rhythm	P waves, QRS relation and regularity	Supports sinus origin
Intervals	PR, QRS and relevant QT context	Characterises conduction

Worked Example

At 25 mm/s, one small 1 mm box represents 0.04 s. An R-R interval of 4 large boxes gives 300/4 = 75 beats/min in a regular rhythm.

Result and Interpretation

Report whether the illustrative pattern supports sinus rhythm and list any technical limitations.

Viva Questions and Answers

Why confirm the paper speed?

The same number of boxes may represent a different time interval.

What does the QRS complex chiefly represent?

Ventricular depolarisation.

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