

Cardiovascular system (PART 2)

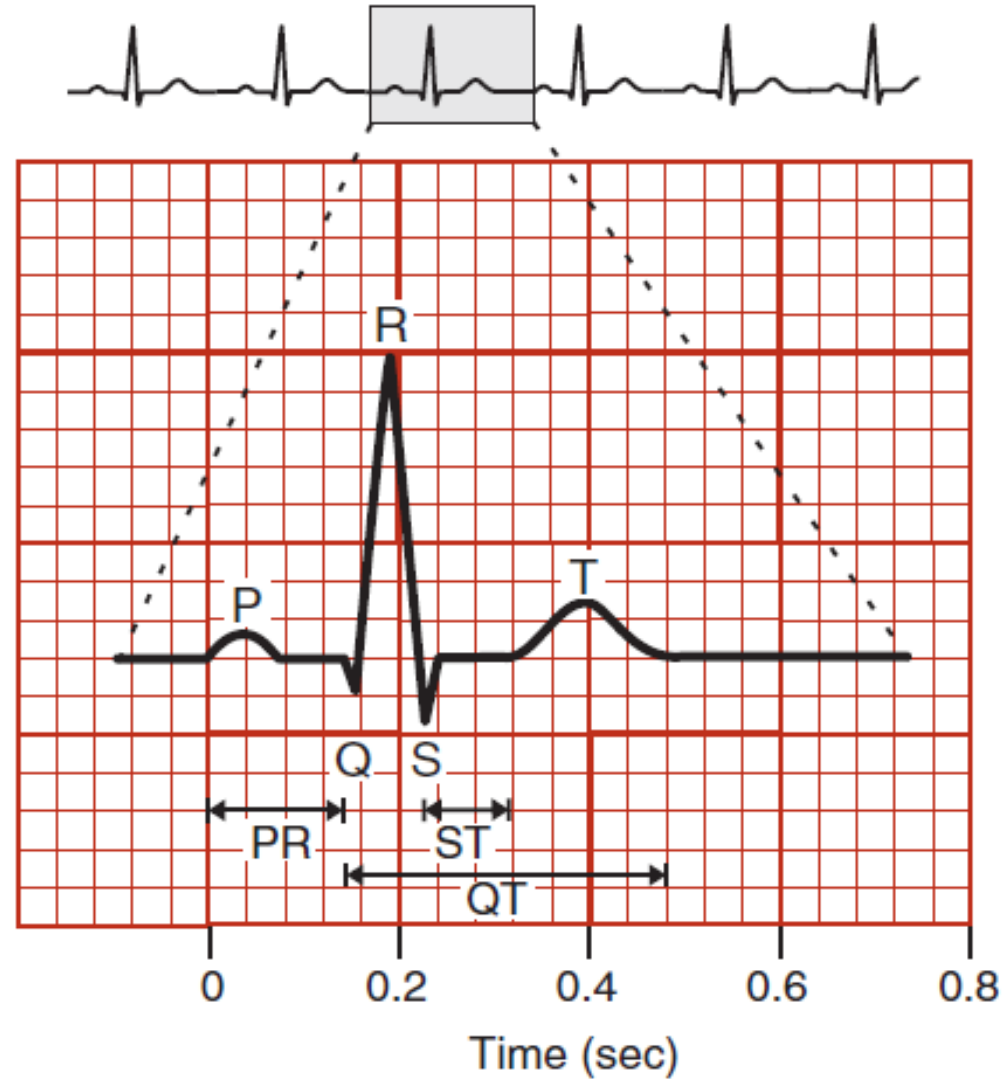
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Lec. 6

THE ELECTROCARDIOGRAM

- The ECG is a crucial diagnostic tool in clinical practice.
- It is **especially useful** in *diagnosing rhythm disturbances*, *changes in electrical conduction*, and *myocardial ischemia* and *infarction*.

ECG Tracing



❖ The first wave of the ECG is the **P wave** It represents the wave of depolarization that spreads from the SA node throughout the **atria**.

❖ No distinctly visible wave represents atrial repolarization in the ECG **because** it is masked by ventricular depolarization and is of relatively small amplitude.

- ❖ The brief **isoelectric** (zero voltage) *period after the P wave* represents the time in which the atrial cells are **depolarized** and the impulse is traveling within the AV node, where conduction velocity is greatly reduced.
- ❖ The **QRS complex** represents *ventricular depolarization*.
- ❖ The **PR interval**, the period of time from the **onset of the P wave** to the beginning of the **QRS complex**,.
- ❖ This interval represents *Atrial depolarization* plus **AV nodal delay** and **onset of ventricular depolarization**.

- ❑ The isoelectric period (**ST segment**) *following the QRS is the period at which the entire ventricle is depolarized and roughly corresponds to the plateau phase of the ventricular action potential.*
- ❑ **T wave** represents *ventricular repolarization* (phase 3 of the action potential).
- ❑ During the **QT interval**, *both ventricular depolarization and repolarization occur.*

TABLE 2-4 SUMMARY OF ECG WAVES, INTERVALS, AND SEGMENTS

ECG COMPONENT	REPRESENTS	NORMAL DURATION (S)
P wave	Atrial depolarization	0.08–0.10
QRS complex	Ventricular depolarization	0.06–0.10
T wave	Ventricular repolarization	¹
PR interval	Atrial depolarization plus AV nodal delay	0.12–0.20
ST segment	Isoelectric period of depolarized ventricles	¹
QT interval	Length of depolarization plus repolarization— corresponds to action potential duration	0.20–0.40 ²

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