

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Heart blocks

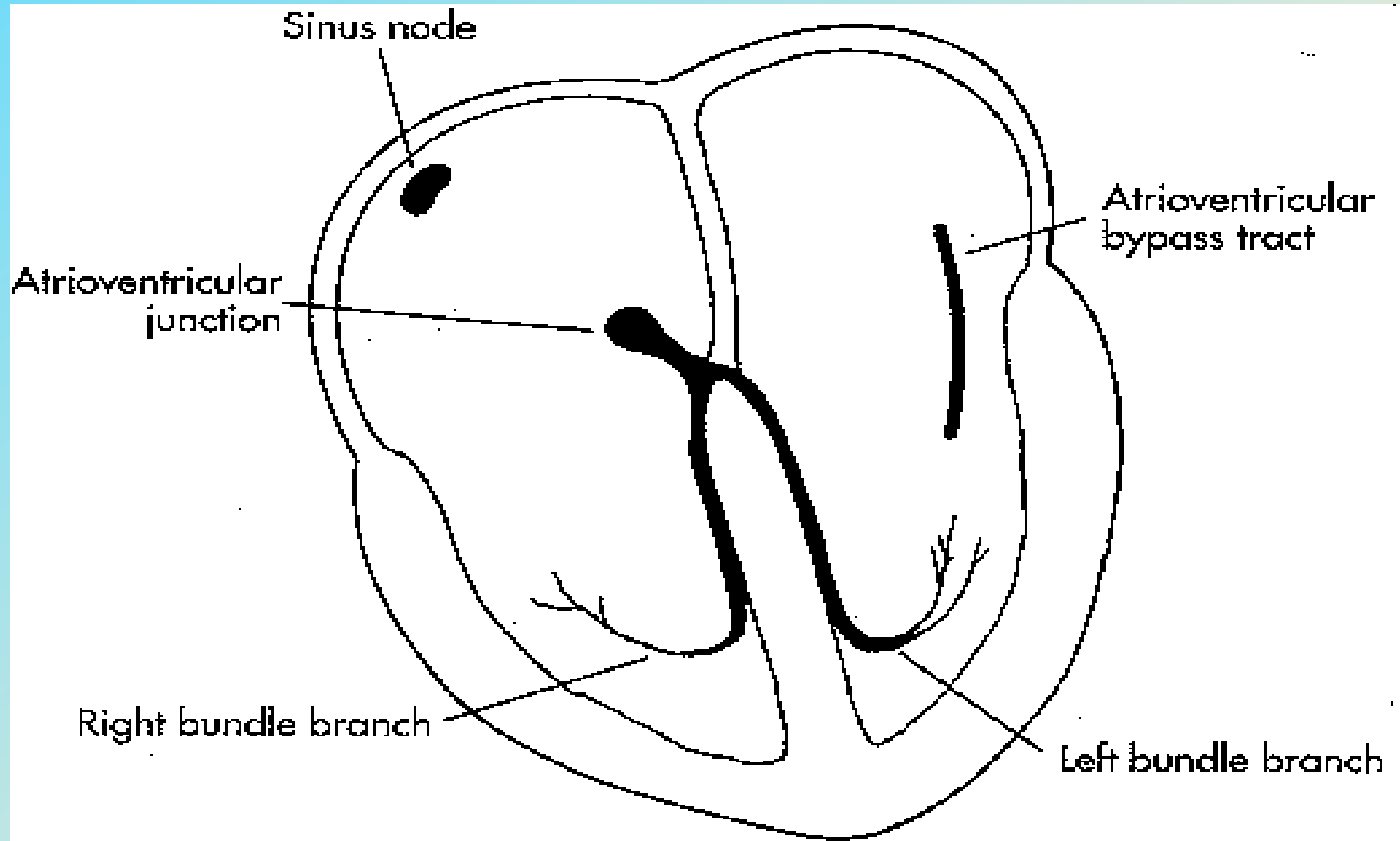
Ali sahebi

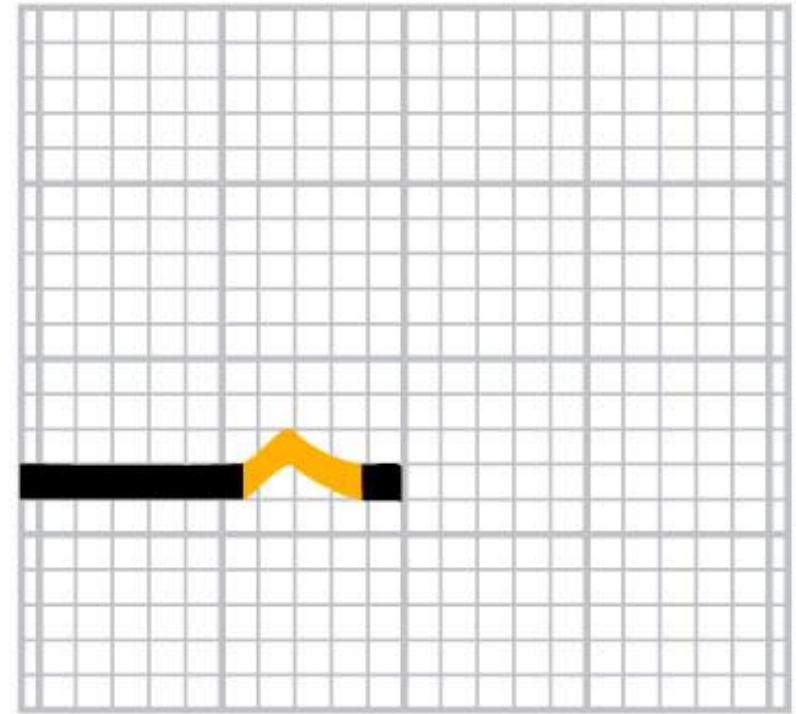
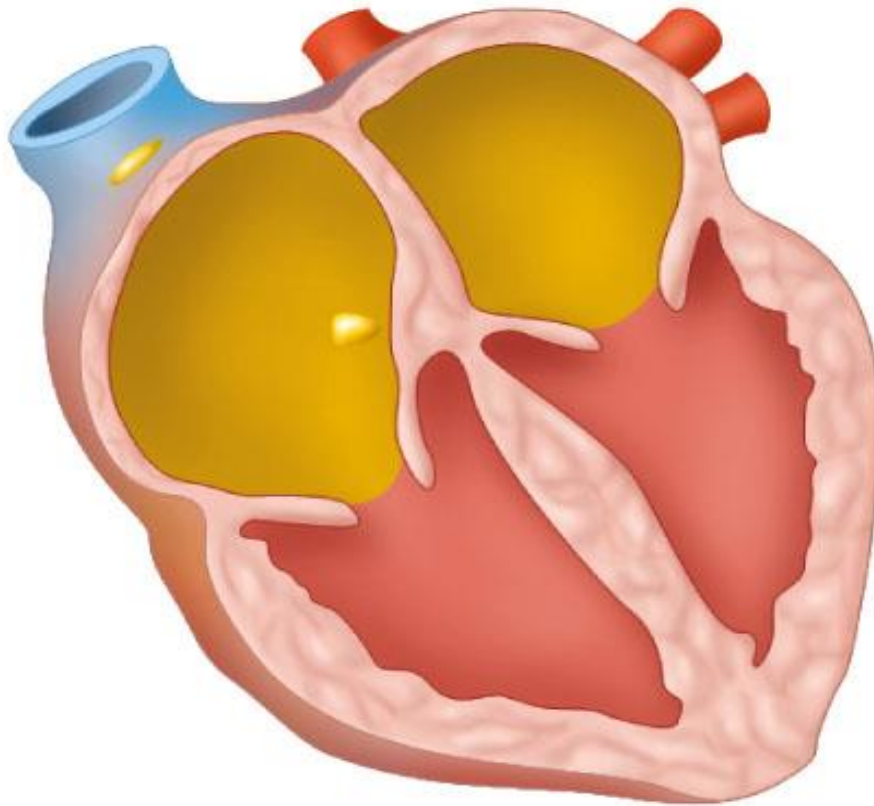
Phd in Health in Emergencies and disasters

Normal Sinus Rhythm

- ▶ Sinus node fires 60 to 100 bpm
- ▶ Follows normal conduction pattern







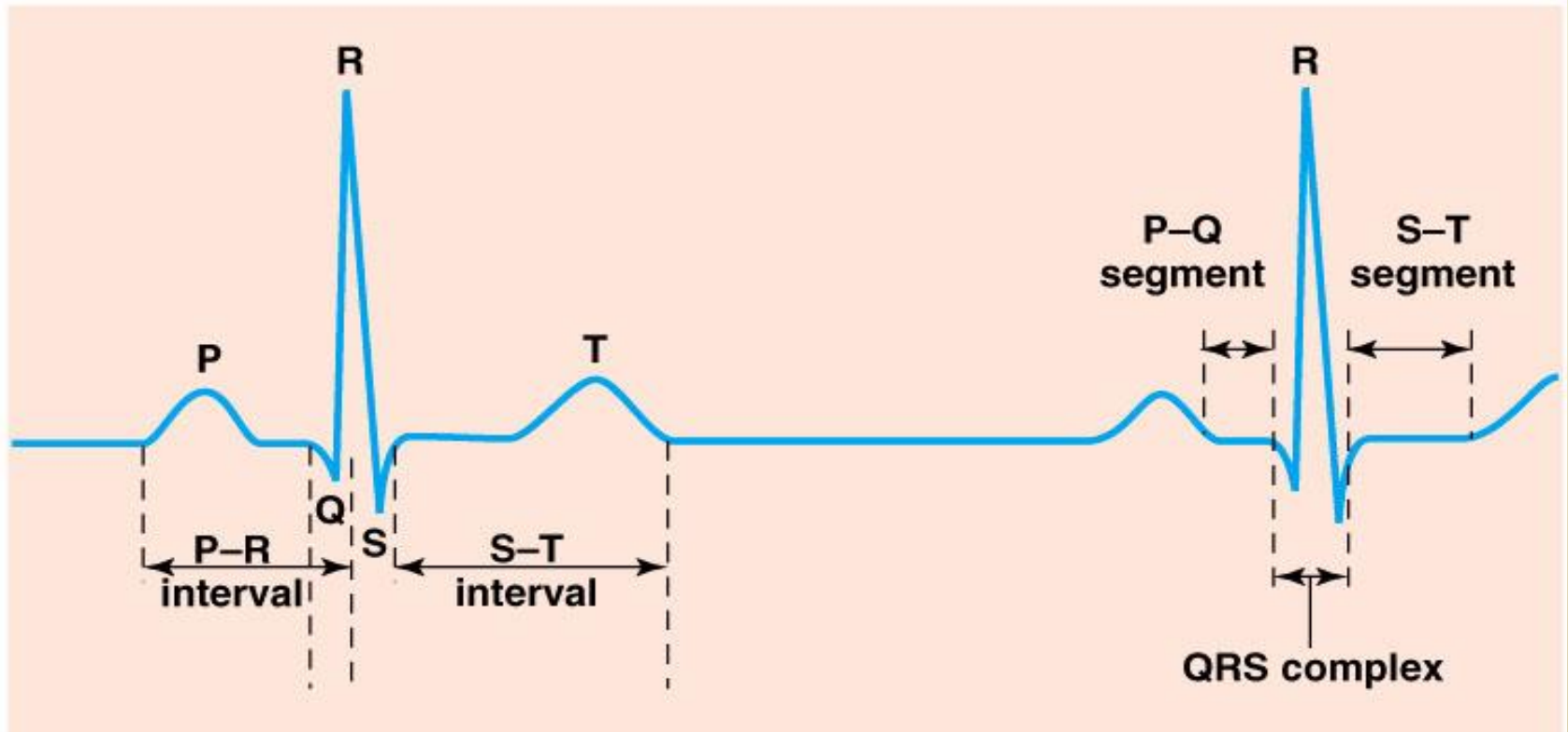
(d)

 Depolarization

 Repolarization

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(b)



- **PR interval:**

- From onset of P wave to onset of QRS
- Normal duration = 0.12–2.0 sec (120–200 ms) (3–4 horizontal boxes)

Types of AV Blocks

lightest

First Degree

1°AVB

Second Degree

Wenckebach / Mobitz I

Mobitz II

Third Degree

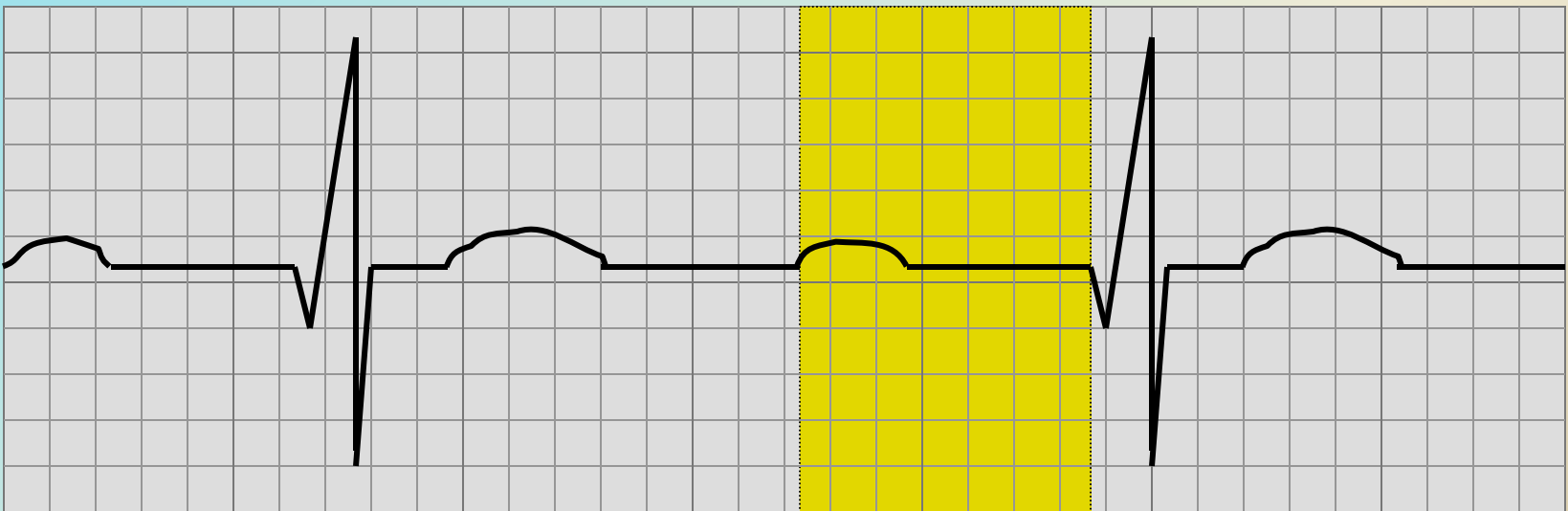
3°AVB

worst

First Degree AV Block (1° AVB)

- ▶ PR interval > .20

A —//— V



Example PR intervals: .28 - .28 - .28 - .28 - .28 - .28

First-Degree AV Block

- ▶ Every impulse is conducted to the ventricles, but duration of AV conduction is prolonged

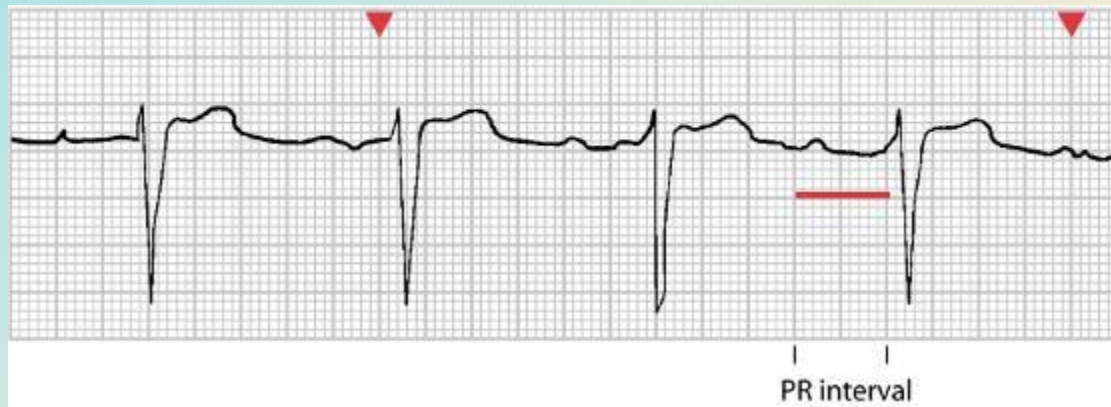


Fig. 36-16A



First-degree AV block

First-Degree AV Block

▶ Clinical associations

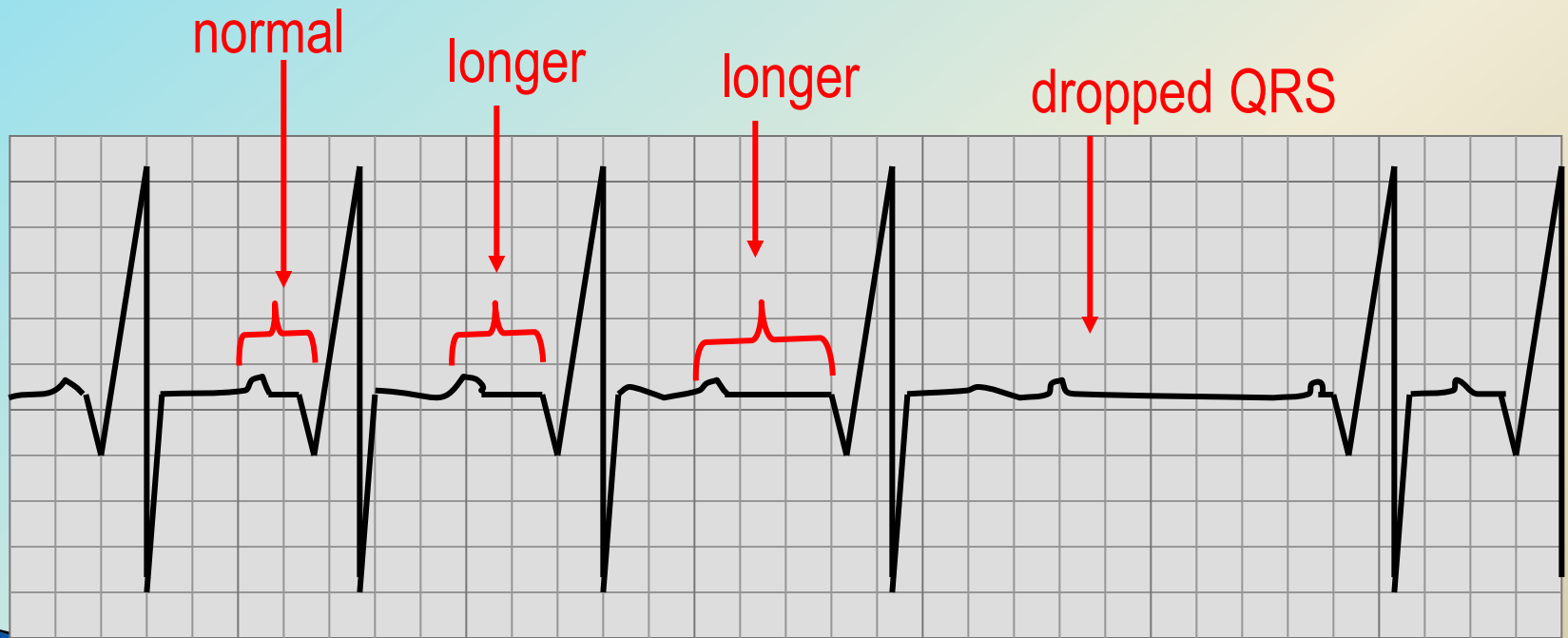
- Usually occurs with
 - MI
 - CAD
 - Rheumatic fever
 - Hyperthyroidism
 - Vagal stimulation
 - Drugs: Digoxin, β -adrenergic blockers, calcium channel blockers, flecainide

First-Degree AV Block

- ▶ **Clinical significance**
 - Usually asymptomatic
 - May be a precursor to higher degrees of AV block
- ▶ **Treatment**
 - Check medications
 - Continue to monitor

Mobitz I: Wenkebach

- ▶ PR interval gradually longer until a QRS is dropped
- ▶ Pattern is repeated
- ▶ Typically not harmful



Example PR intervals: .14 - .20 - .32 - B - .14 - .20 - 32 - B

Second-Degree AV Block, Type 1 (Mobitz I, Wenckebach)

- ▶ Gradual lengthening of the PR interval, due to prolonged AV conduction time
- ▶ Atrial impulse is nonconducted and a QRS complex is blocked (missing)
- ▶ Usually block occurs at AV node, but can occur in His-Purkinje system

Second-Degree AV Block, Type 1 (Mobitz I, Wenckebach)

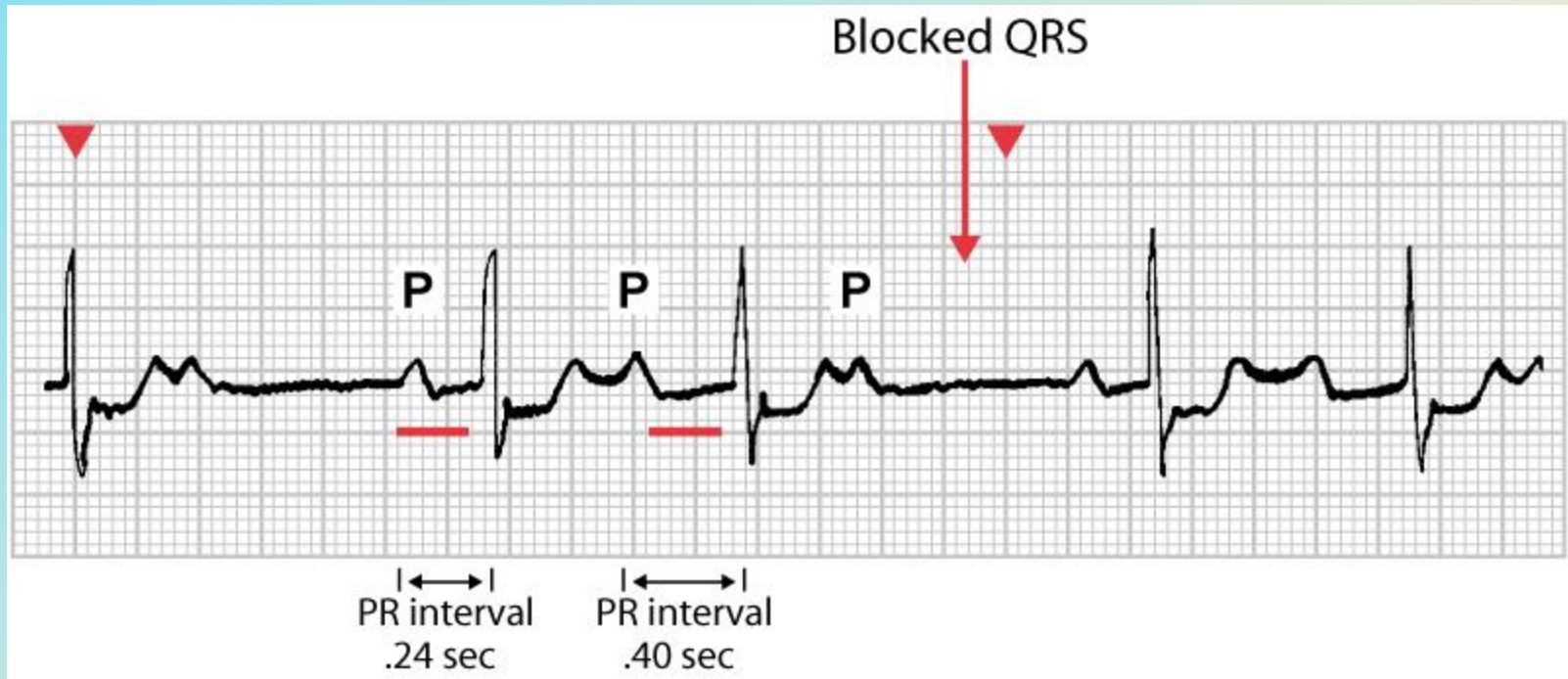


Fig. 36-16B

Second-Degree AV Block, Type 1 (Mobitz I, Wenckebach)

▶ Clinical associations

- Drugs: digoxin, β -adrenergic blockers
- May be associated with CAD and other diseases that can slow AV conduction

Second-Degree AV Block, Type 1 (Mobitz I, Wenckebach)

► Clinical significance

- Usually a result of myocardial ischemia or infarction
- Almost always transient and well tolerated
- May be a warning signal of a more serious AV conduction disturbance

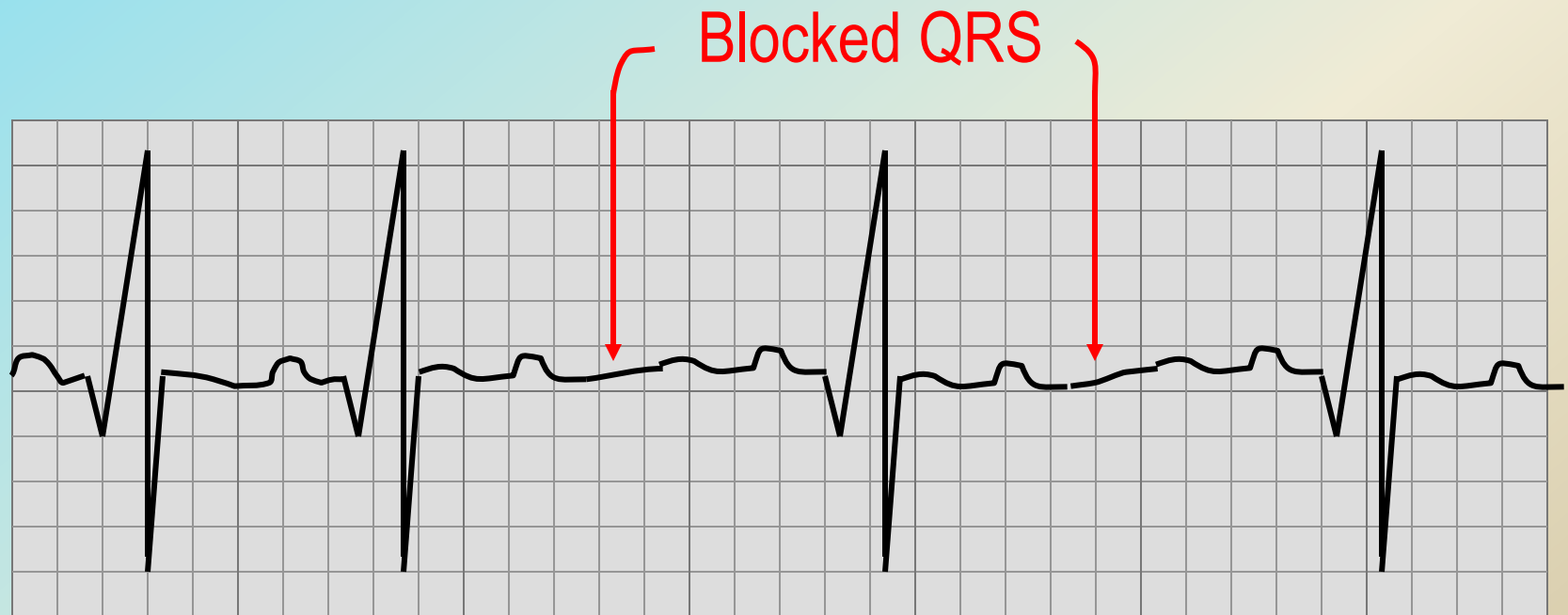
Second-Degree AV Block, Type 1 (Mobitz I, Wenckebach)

► Treatment

- If symptomatic, atropine or a temporary pacemaker
- If asymptomatic, monitor with a transcutaneous pacemaker on standby
- Symptomatic bradycardia is more likely with one or more of the following: hypotension, HF, shock

Mobitz II

- ▶ PR interval consistent except some QRS missing
- ▶ Harmful--may indicate serious heart disease or progress to 3rd degree block



Example PR intervals: .16 – B - .16 – B - .16 - .16 - B

Second-Degree AV Block, Type 2 (Mobitz II)

- ▶ P wave is nonconducted without progressive antecedent PR lengthening
- ▶ Usually occurs when a block in one of the bundle branches is present

Second-Degree AV Block, Type 2 (Mobitz II)

Second-degree AV block
(Type II AV block [Mobitz Type II])

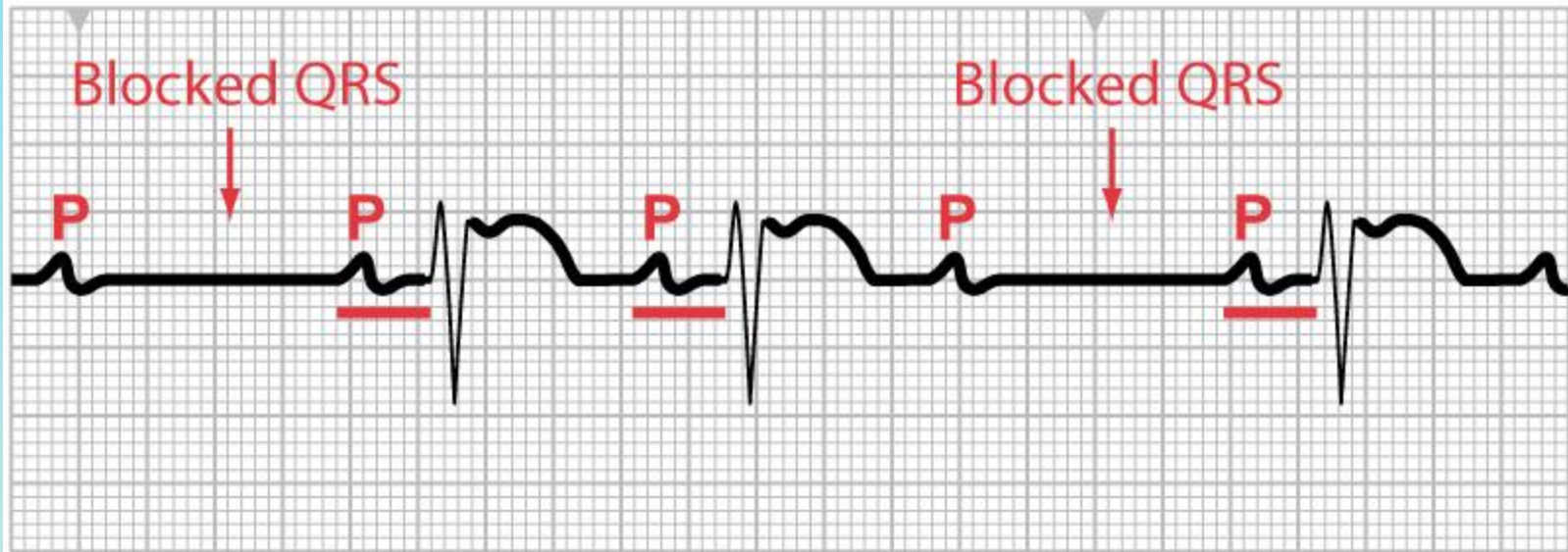
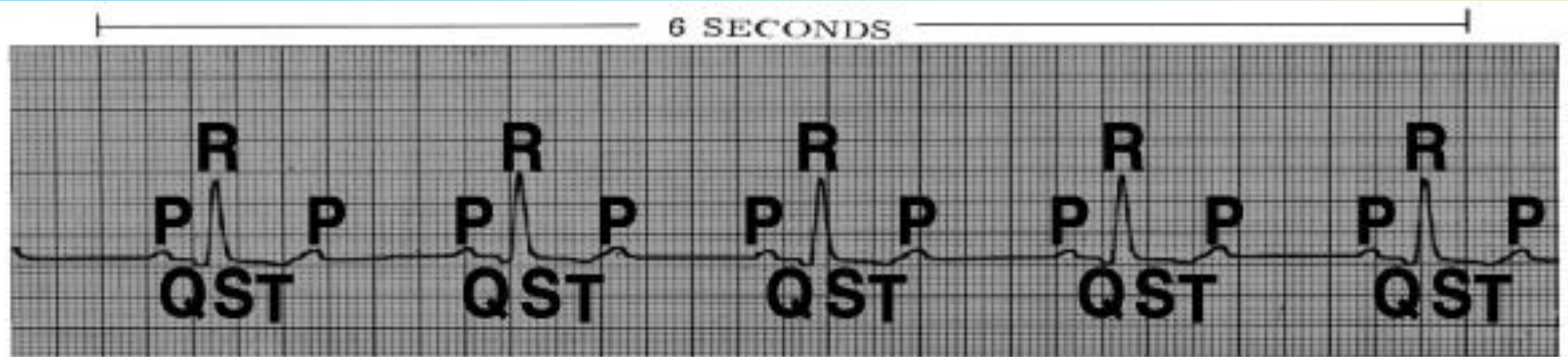


Fig. 36-16C



Second-degree AV block

Second-Degree AV Block, Type 2 (Mobitz II)

- ▶ Clinical associations
 - Rheumatic heart disease
 - CAD
 - Anterior MI
 - Digitalis toxicity

Second-Degree AV Block, Type 2 (Mobitz II)

▶ Clinical significance

- Often progresses to third-degree AV block and is associated with a poor prognosis
- Reduced HR often results in decreased CO with subsequent hypotension and myocardial ischemia

Second-Degree AV Block, Type 2 (Mobitz II)

► Treatment

- If symptomatic (e.g., hypotension, angina) before permanent pacemaker can be inserted, temporary transvenous or transcutaneous pacemaker
- Permanent pacemaker

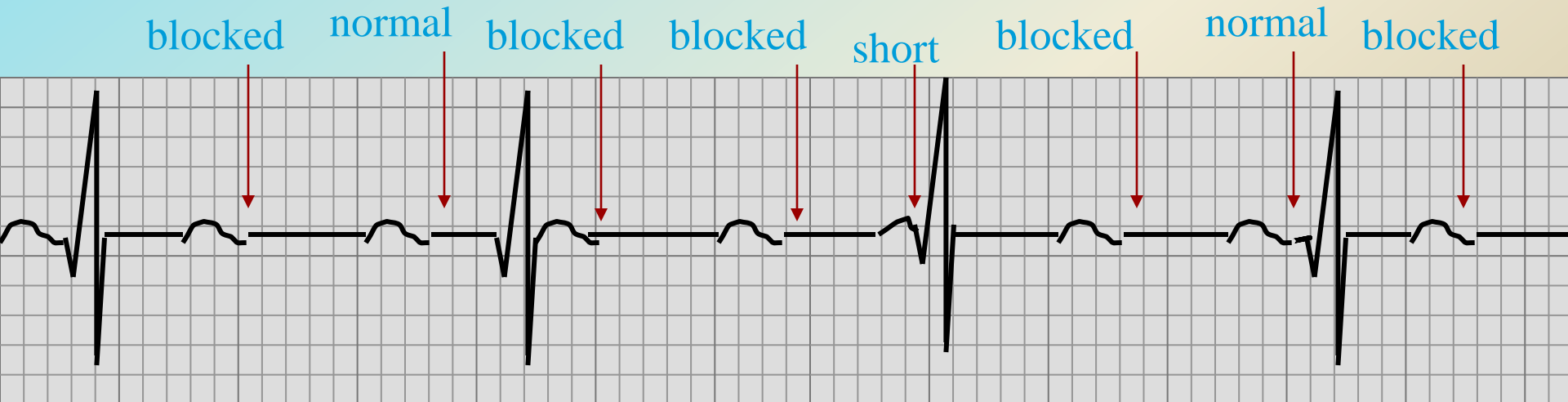
3rd Degree AV Block (3° AVB)

Atria & ventricles act independently

- ▶ Regular P waves
- ▶ Regular QRS complexes

But...P waves and QRS not working together

- ▶ PR interval varies (but not in Wenkebach pattern)
- ▶ **Harmful -- patient needs a pacemaker soon!**



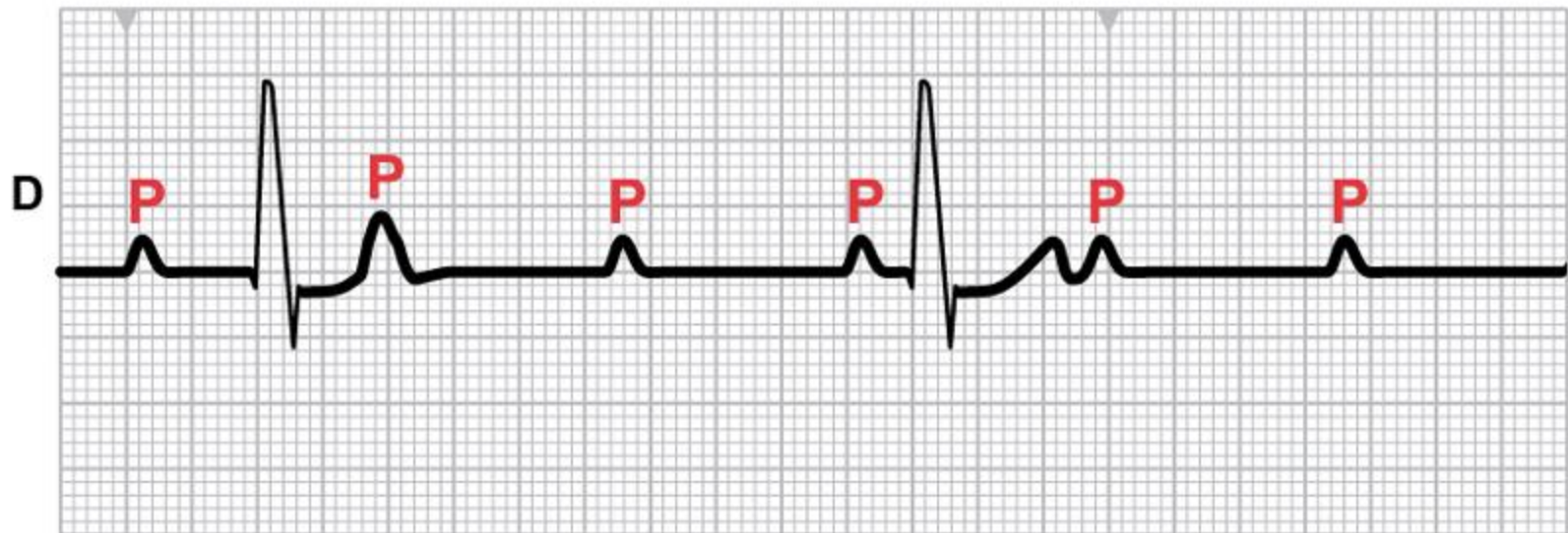
Example PR intervals: .14 - B - .20 - B - B - .12 - B - .44 - .32 - B

Third-Degree AV Heart Block (Complete Heart Block)

- ▶ Form of AV dissociation in which no impulses from the atria are conducted to the ventricles
 - Atria are stimulated and contract independently of the ventricles
 - Ventricular rhythm is an escape rhythm
 - Ectopic pacemaker may be above or below the bifurcation of the bundle of His

Third-Degree AV Heart Block (Complete Heart Block)

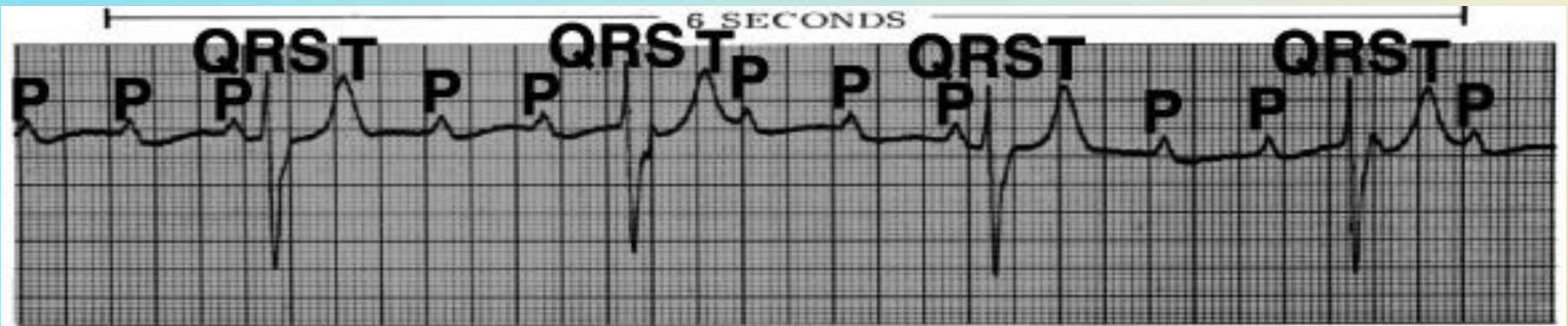
Third-degree AV block
(complete heart block)



(From Huszar RJ: *Basic dysrhythmias: interpretation and management*, ed 3, St. Louis, 2002, Mosby.)

Fig. 36-16 D





Third-degree AV block

Third-Degree AV Heart Block (Complete Heart Block)

► Clinical associations

- Severe heart disease: CAD, MI, myocarditis, cardiomyopathy
- Systemic diseases: Amyloidosis, scleroderma
- Drugs: Digoxin, β -adrenergic blockers, calcium channel blockers

Third-Degree AV Heart Block (Complete Heart Block)

- ▶ **Clinical significance**

- Decreased CO with subsequent ischemia, HF, and shock
- Syncope may result from severe bradycardia or even periods of asystole

Third-Degree AV Heart Block (Complete Heart Block)

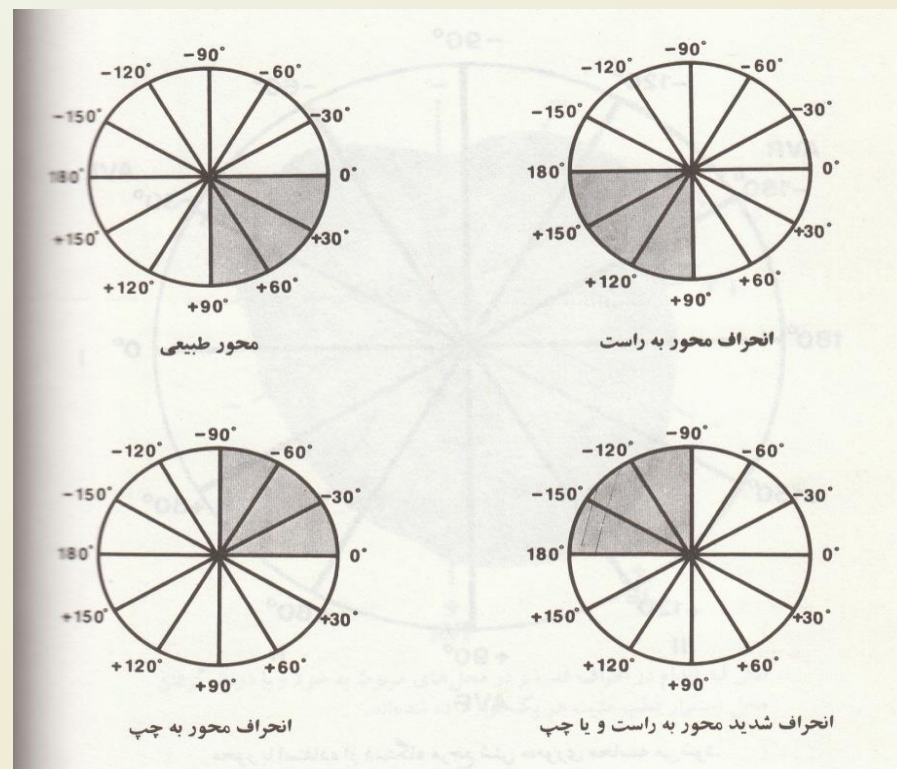
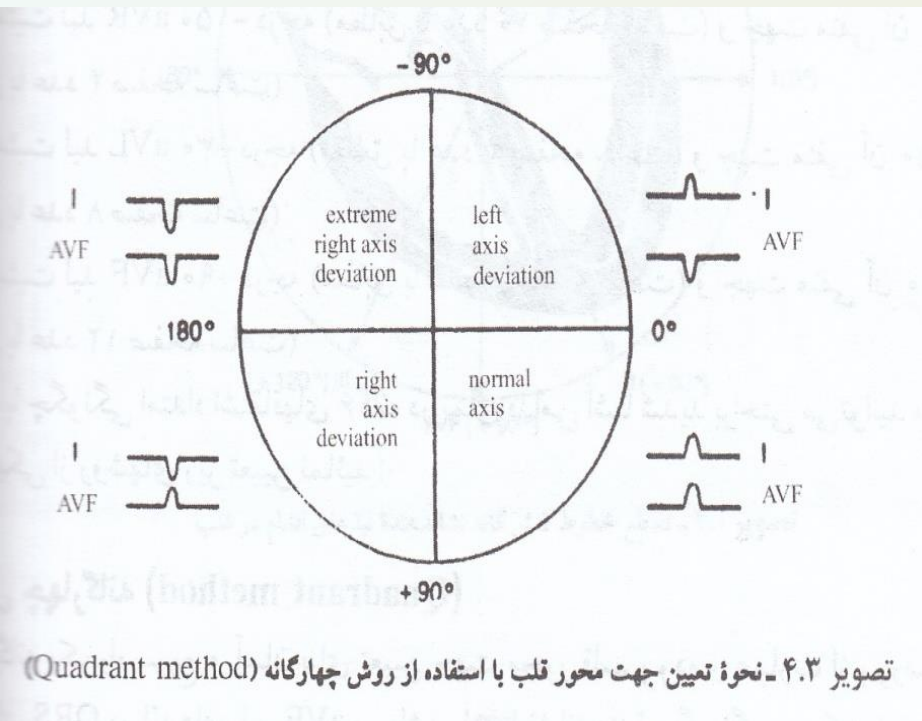
▶ Treatment

- If symptomatic, transcutaneous pacemaker until a temporary transvenous pacemaker can be inserted
 - Drugs (e.g., atropine, epinephrine): Temporary measure to increase HR and support BP until temporary pacing is initiated
- Permanent pacemaker as soon as possible

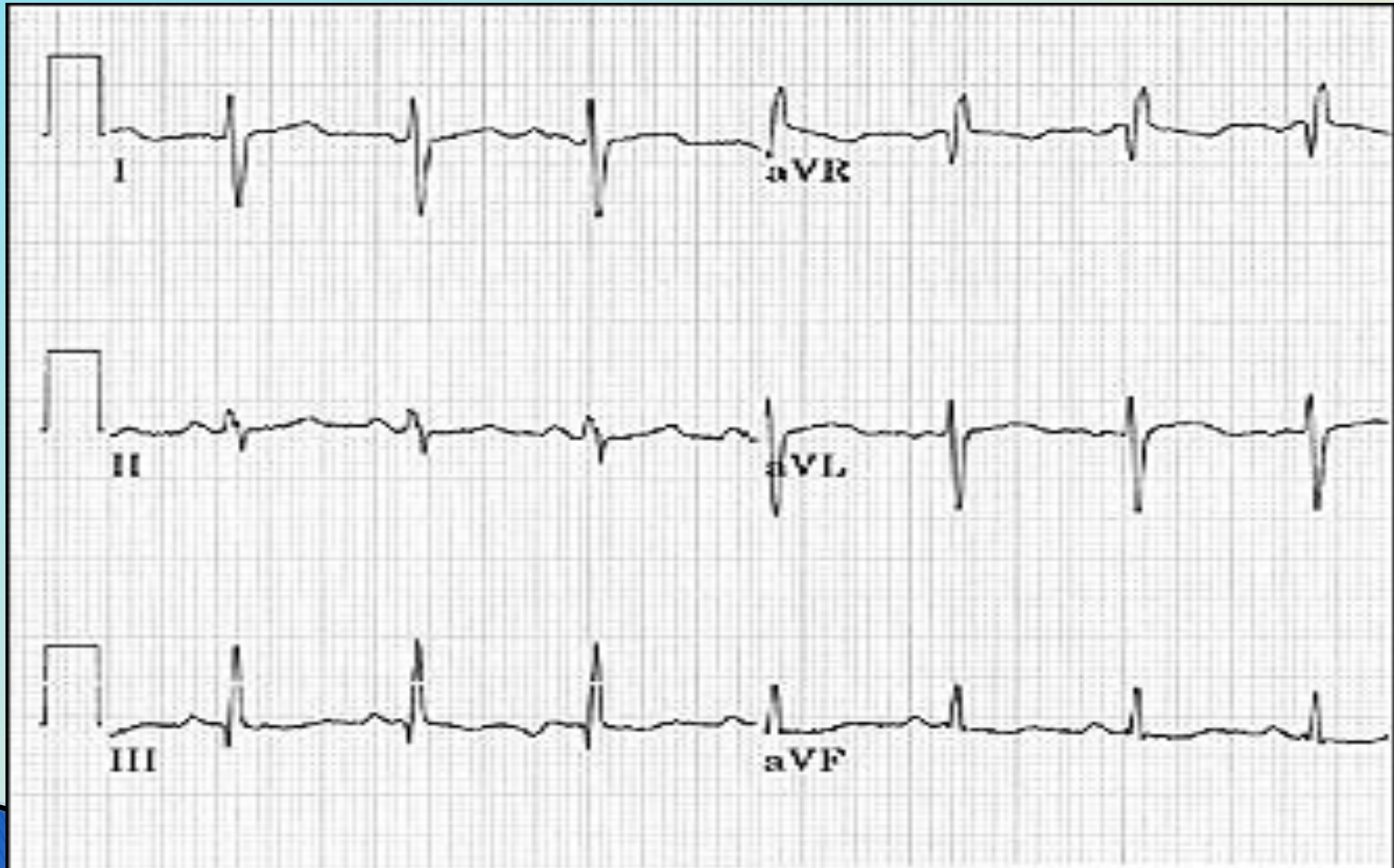
Heart Block Review

	Other Name	PR Interval	Characteristic
1 st ° AV Block		Same	PR Interval > .20
2 nd ° AV Block	Wenkebach or Mobitz I	Different	PR Interval gets longer until 1 is dropped
2 nd ° AV Block	Mobitz II	Same	PR Interval is the same when you can measure it, some p waves do not have a QRS after it so you can't measure a PR Interval for all
3 rd ° AV Block		Different	PR Interval varies but not in any pattern, P waves and QRS waves are not in any relationship to each other

انحراف محور قلب

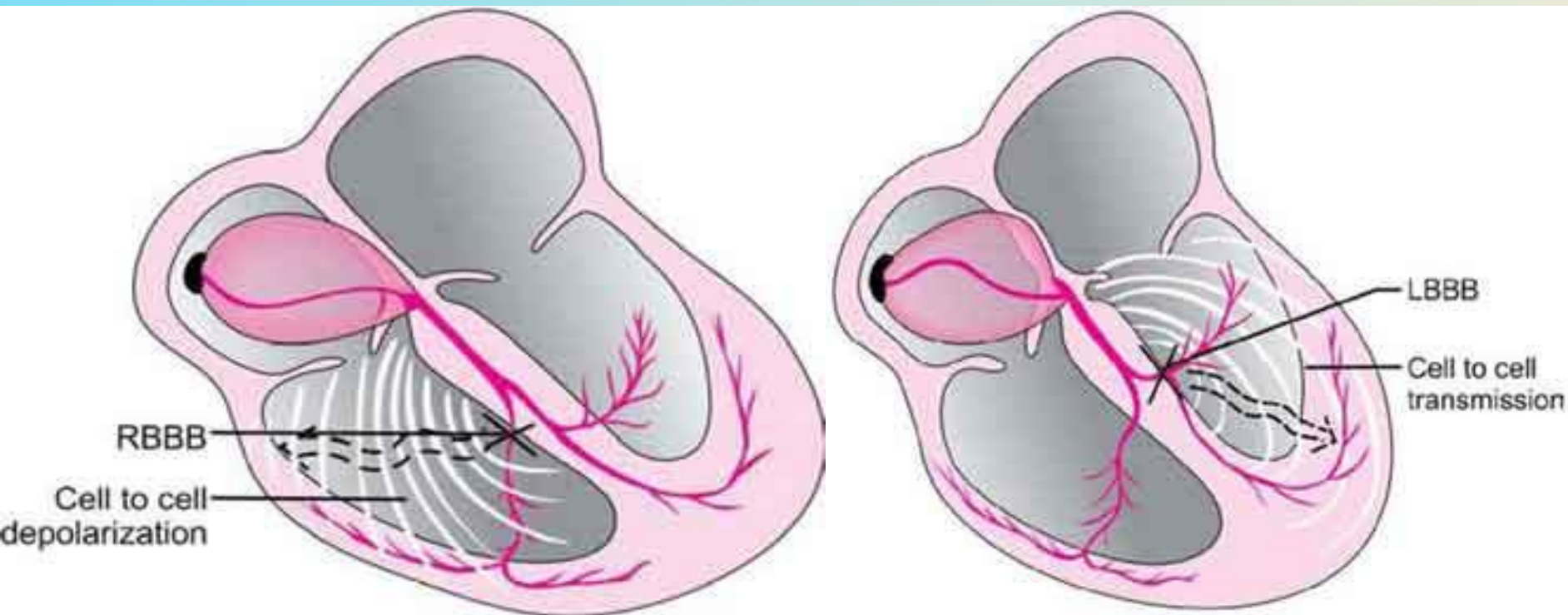


نمونه ای از تغییر محور قلب





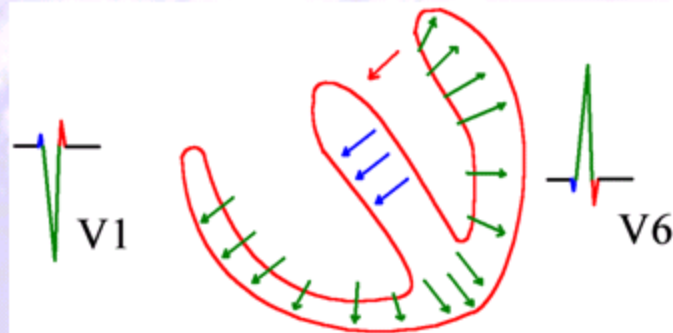
Bundle Branch Block = QRS is $> .11$



ترتیب انقباض :

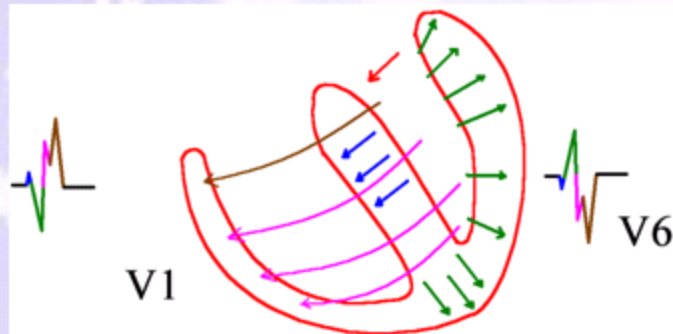
طبیعی :

سپتوم - بطنها - پورکنتر



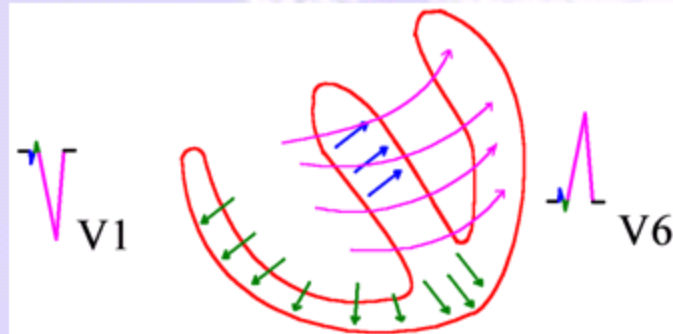
:RBBB

سپتوم - بطن چپ - بطن راست
انقباض بطن راست با کندی است

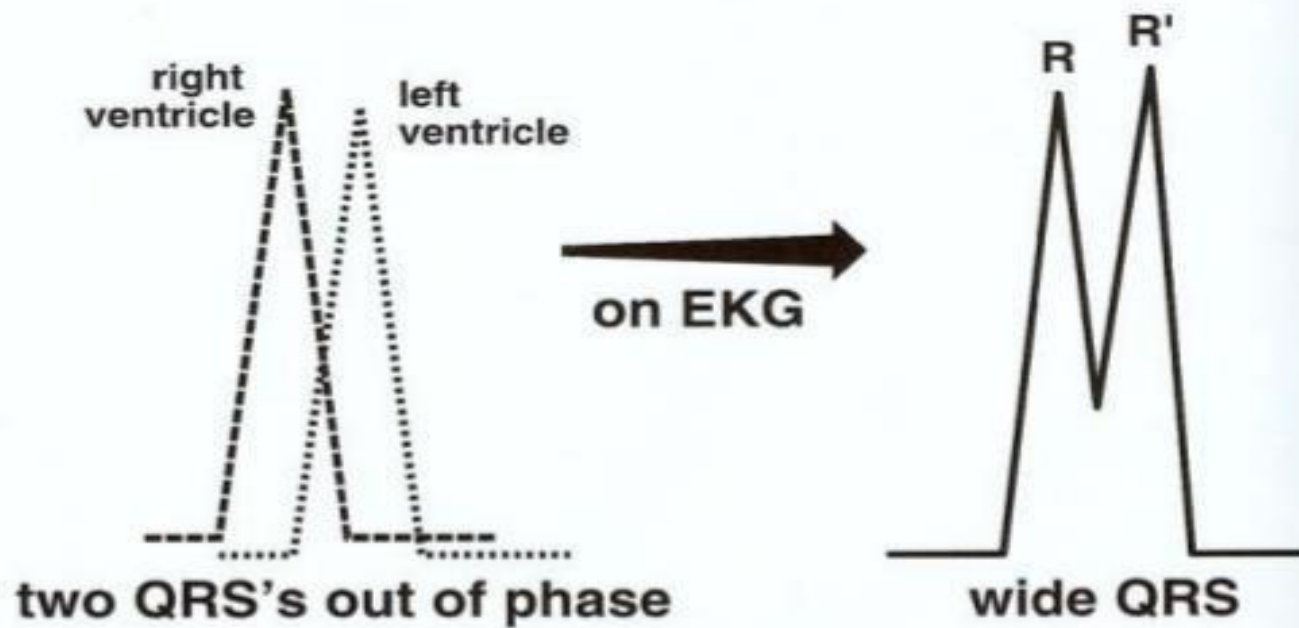


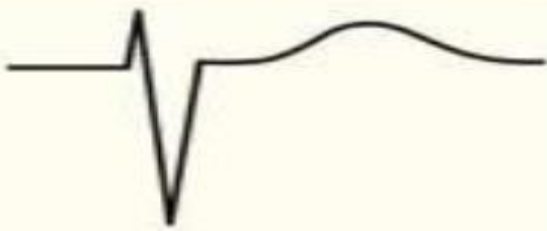
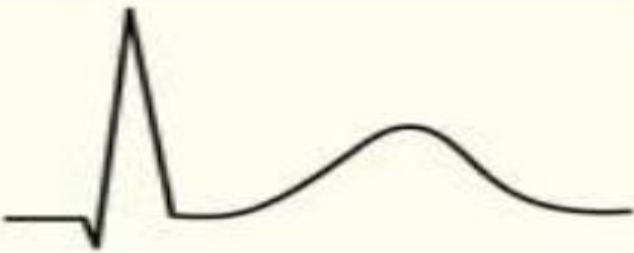
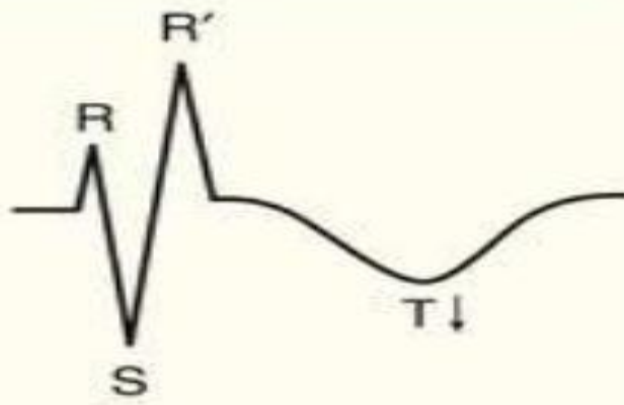
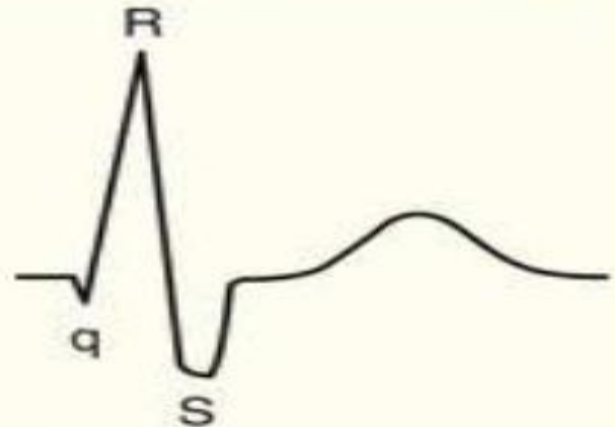
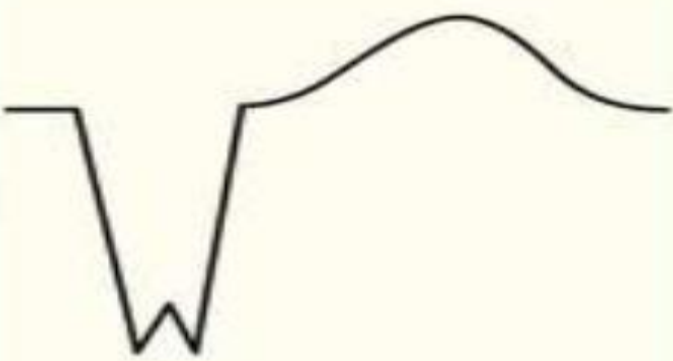
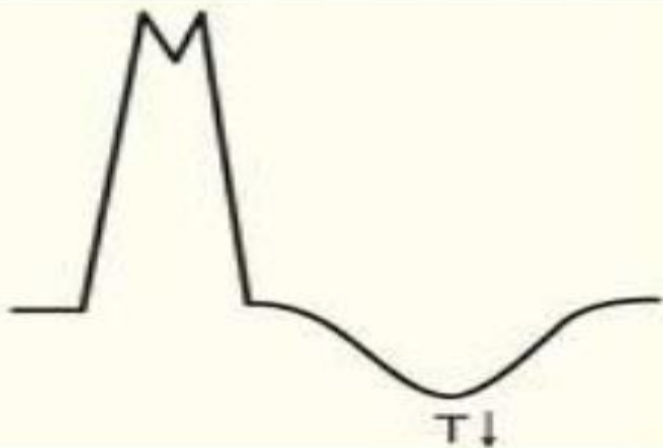
:LBBB

سپتوم از راست به چپ
بطن راست - بطن چپ
انقباض بطن چپ با کندی است

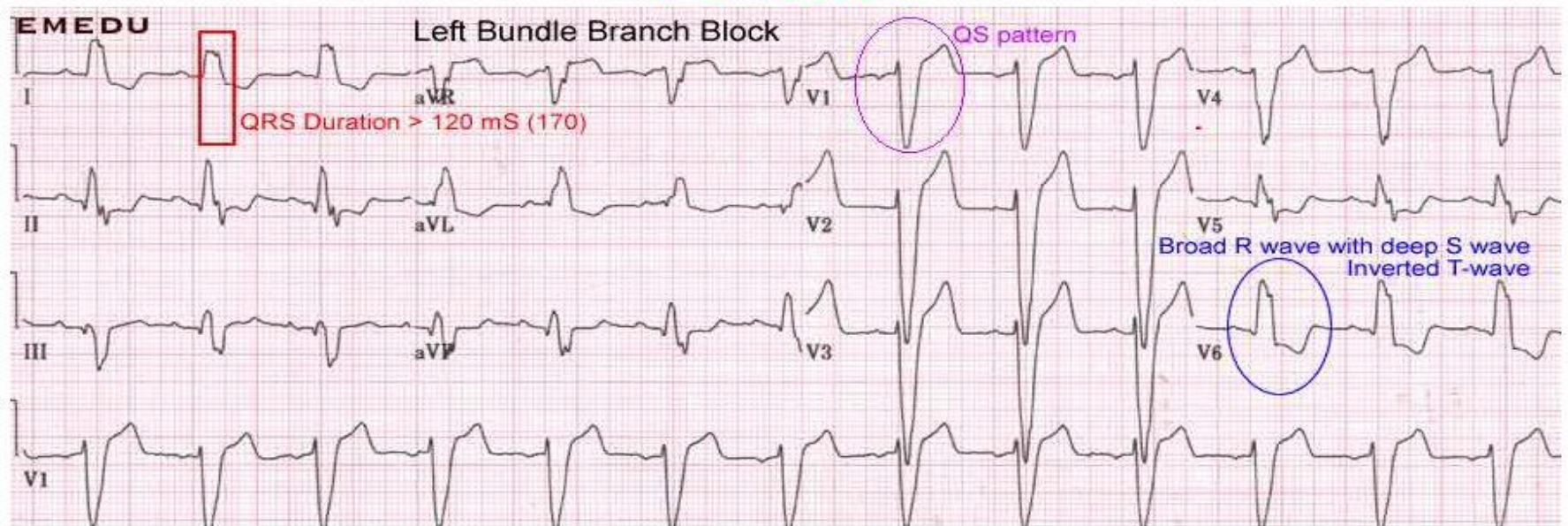


Bundle Branch Block



	V ₁	V ₆
Normal		
RBBB		
LBBB		

LBBB



علل



با تشکر از حسن توجه شما