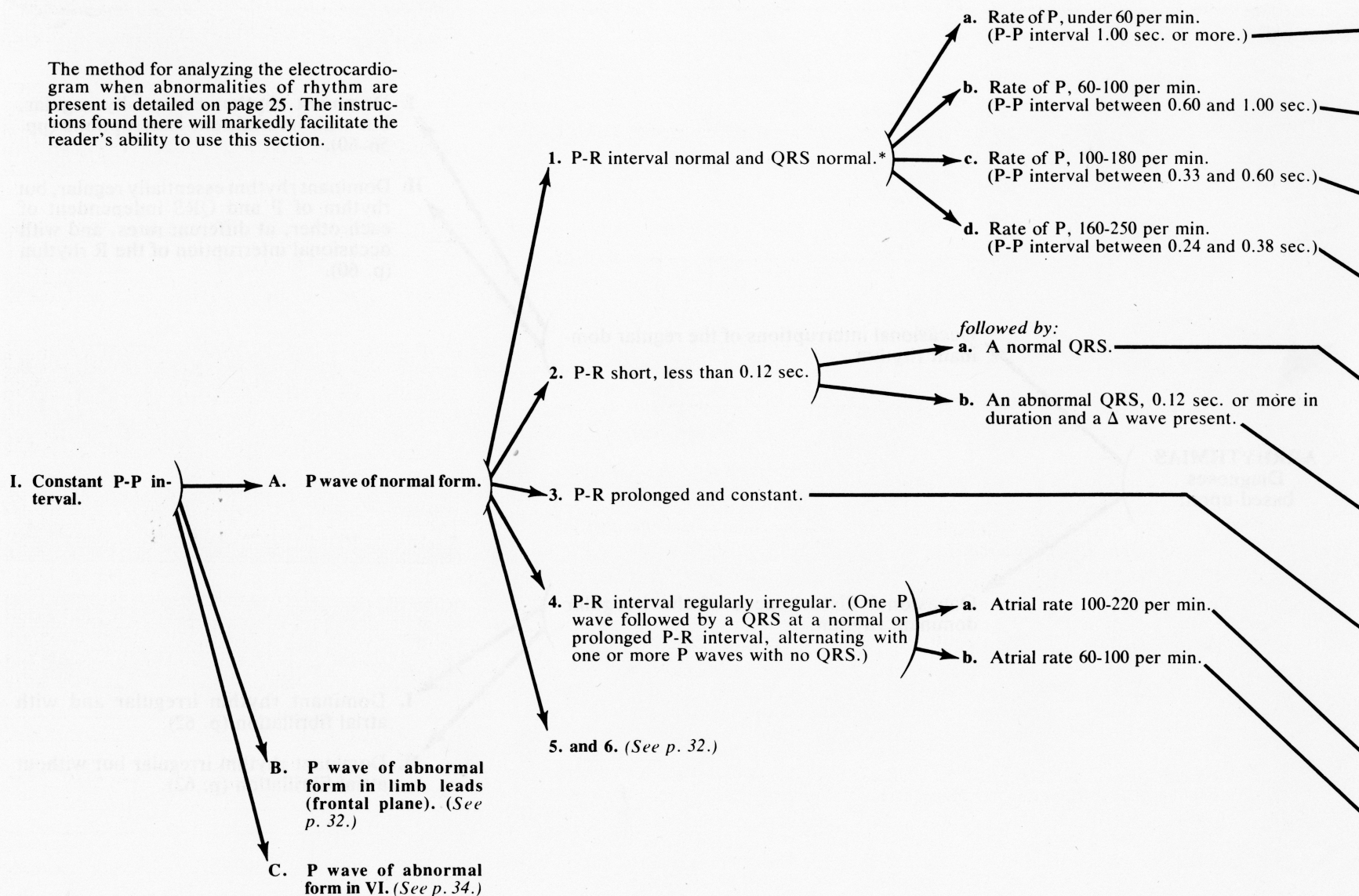


ARRHYTHMIAS—DIAGNOSES BASED ON THE P WAVE OR OTHER ATRIAL ACTIVITY

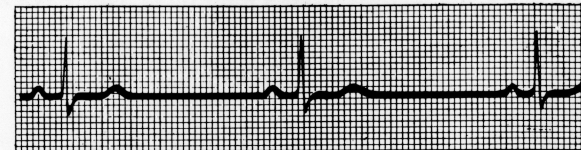
The method for analyzing the electrocardiogram when abnormalities of rhythm are present is detailed on page 25. The instructions found there will markedly facilitate the reader's ability to use this section.



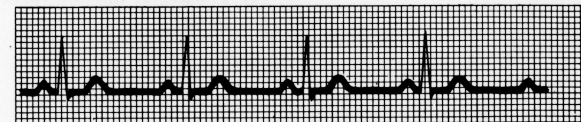
*If QRS is abnormal in form and prolonged to 0.12 sec. or more, the additional diagnosis is intraventricular conduction disturbance, usually of the bundle branch type. (See Chap. 4.)

†The differential diagnosis of sinus and atrial tachycardia will be discussed in Volume II.

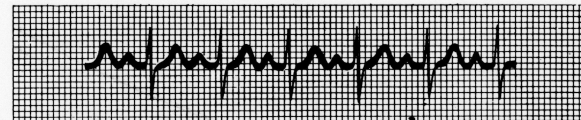
→ *Sinus bradycardia.* → FIG. P1



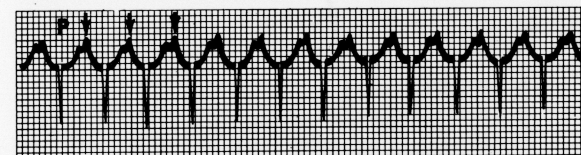
→ *Regular sinus rhythm.* → FIG. P2



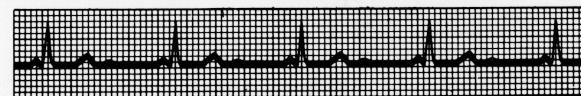
→ *Sinus tachycardia.†* → FIG. P3



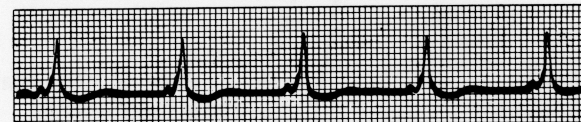
→ *Atrial tachycardia.†* → FIG. P4



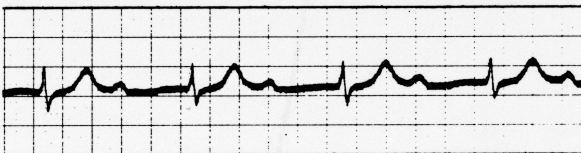
→ *The syndrome of short P-R interval and normal QRS.* → FIG. P5
(The L.G.L. syndrome)



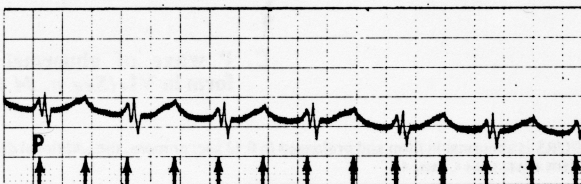
→ *Pre-excitation syndrome: Wolff-Parkinson-White (WPW).* → FIG. P6



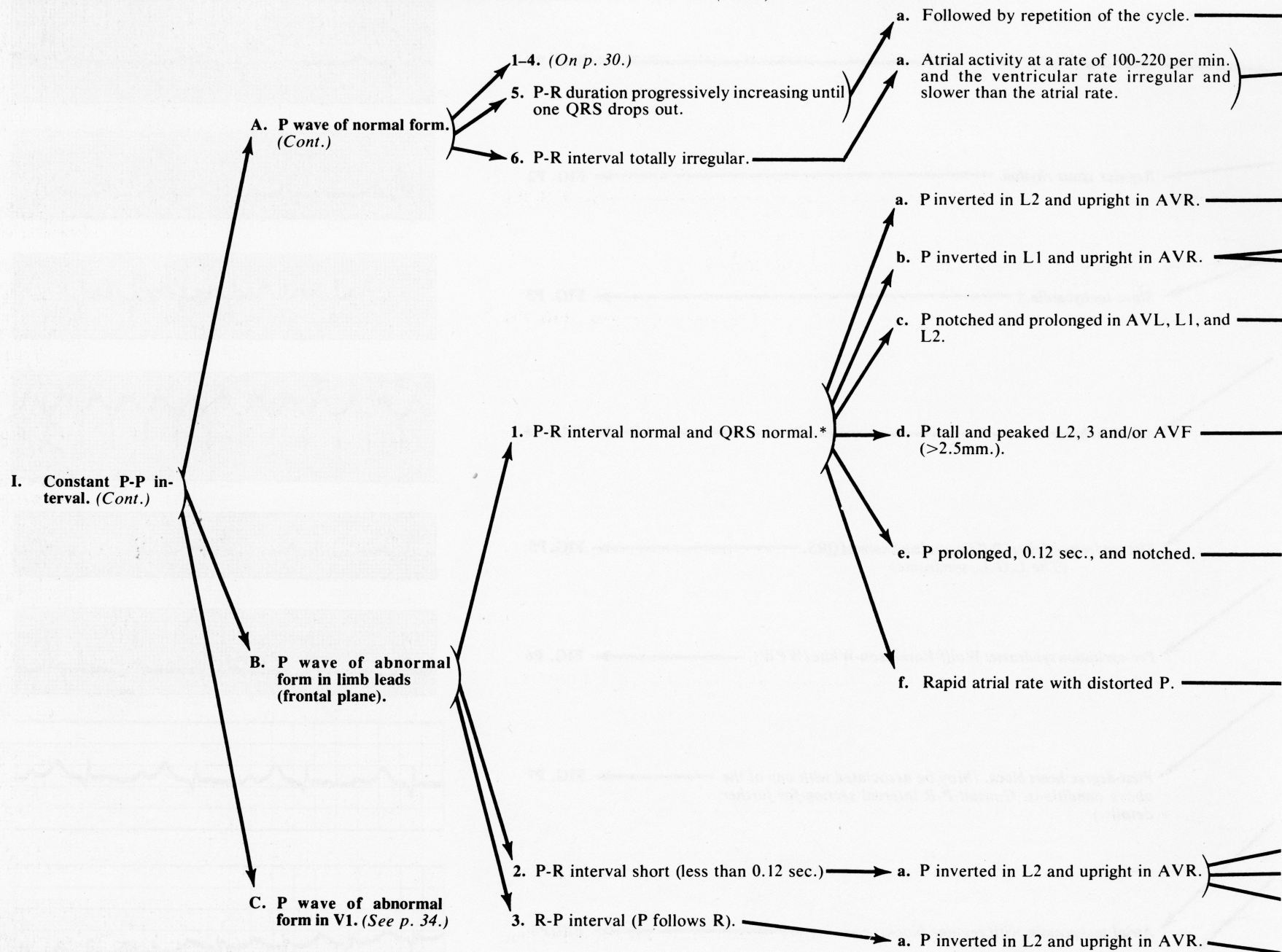
→ *First-degree heart block. (May be associated with any of the above conditions. Consult P-R interval section for further details.)* → FIG. P7



→ *Atrial tachycardia with regular block.* → FIG. P8



→ *Second degree heart block.*



*If QRS is abnormal in form and prolonged to 0.12 sec. or more, the additional diagnosis is intraventricular conduction disturbance, usually of the bundle branch type. (See Chap. 4.)

→ *Wenkebach periods. (See Fig. P49.)*

→ *Atrial tachycardia with irregular block.* → FIG. P9

→ *Coronary sinus rhythm (or ectopic atrial focus).* → FIG. P10

→ *Dextrocardiac (QRS abnormal in V leads). (See Fig. Q7.)*

→ *Improper placement of RA and LA electrode (QRS normal in V leads).*

→ *P mitrale (or aberrant atrial depolarization).* → FIG. P11

→ *P pulmonale (or aberrant atrial depolarization).* → FIG. P12

→ *Intra-atrial block.* → FIG. P13

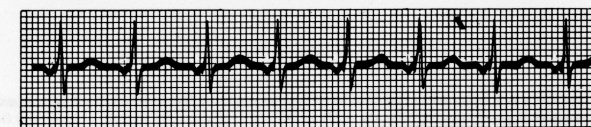
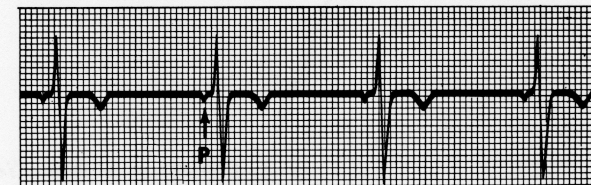
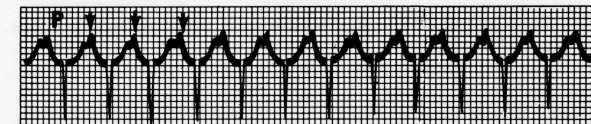
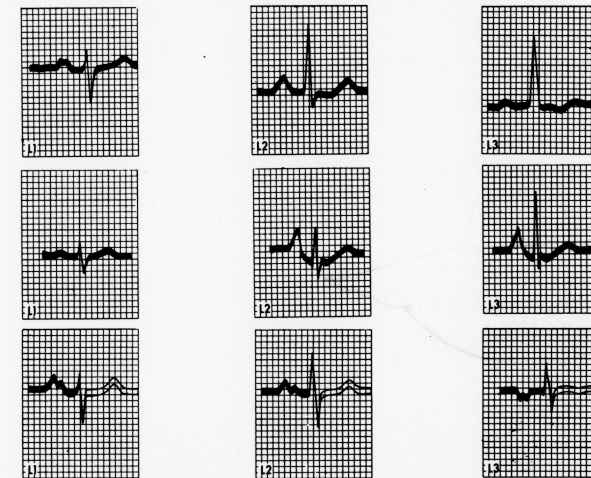
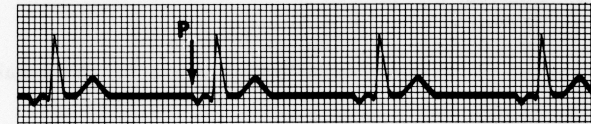
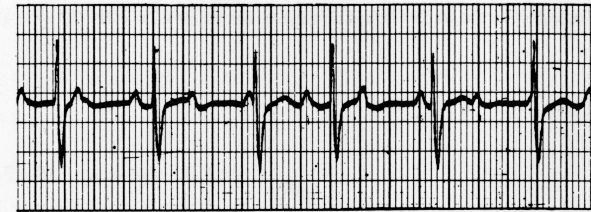
→ *Atrial tachycardia.* → FIG. P14

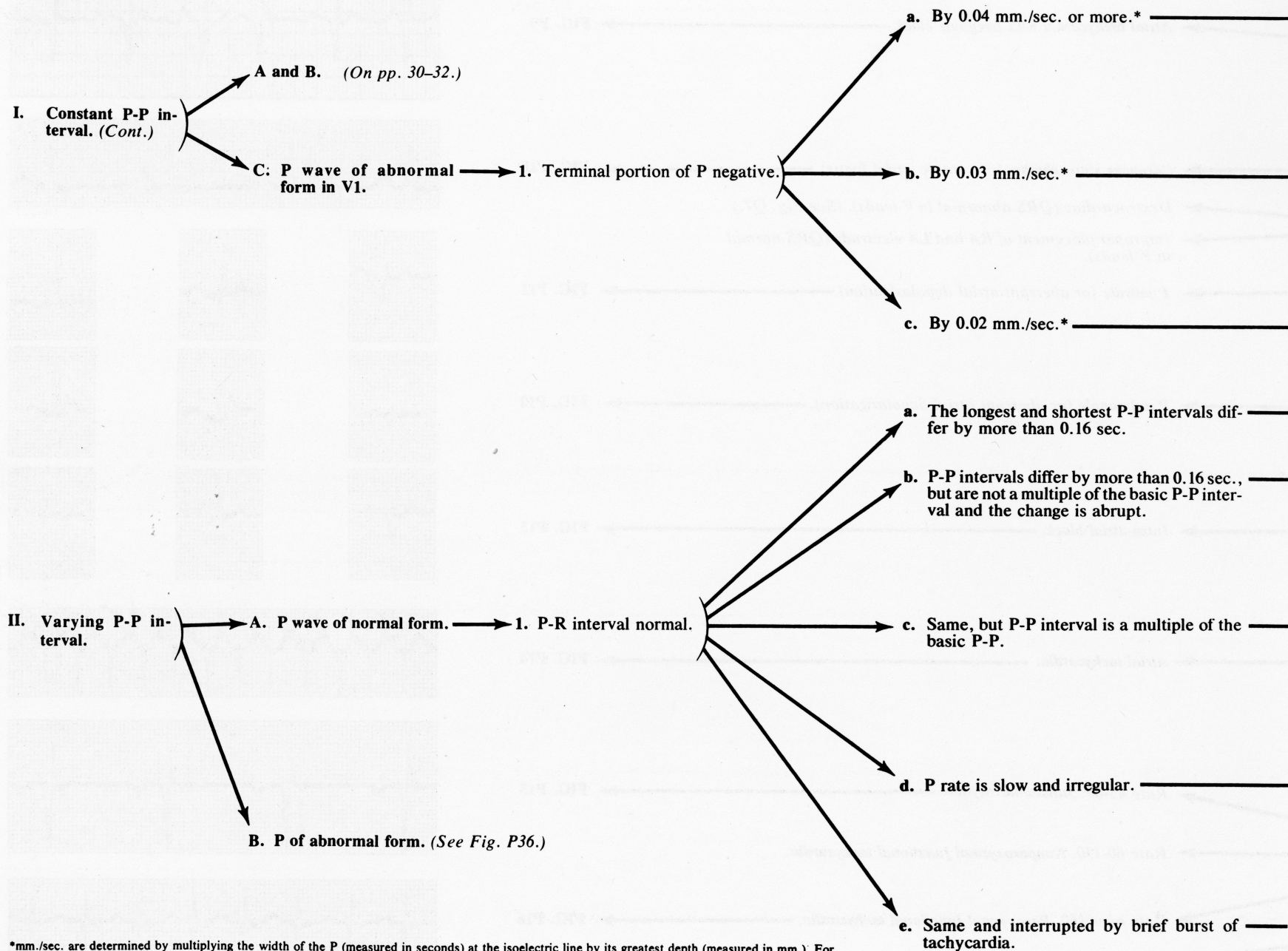
→ *Rate 45-60. Junctional rhythm.* → FIG. P15

→ *Rate 60-150. Nonparoxysmal junctional tachycardia.*

→ *Rate over 160. Paroxysmal junctional tachycardia.* → FIG. P16

→ *Rate 45-60. Junctional rhythm.*



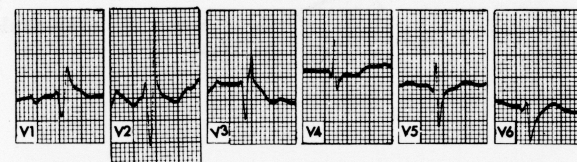


*mm./sec. are determined by multiplying the width of the P (measured in seconds) at the isoelectric line by its greatest depth (measured in mm.). For example, for a P wave 0.04 sec. wide and 1 mm. deep: 0.04 sec. $\times$ 1 mm. = 0.04 mm./sec.

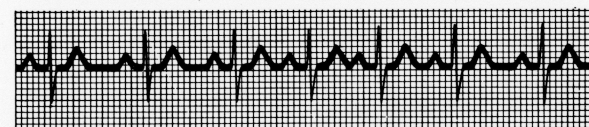
→ *L atrial abnormality.* → FIG. P17



→ *Probable L atrial abnormality.* → FIG. P18



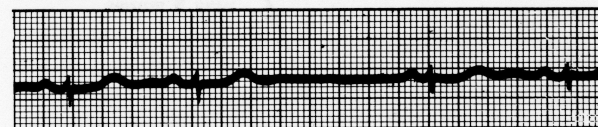
→ *Possible L atrial abnormality.* → FIG. P19



Gradually increasing with inspiration and decreasing with expiration. Sinus arrhythmia (phasic).

→ *Rhythmically varying P-P interval, independent of respiration. Sinus arrhythmia (non-phasic).*

→ *Intermittent sinus arrest.* → FIG. P20



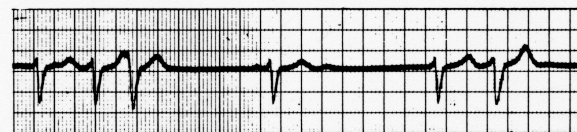
→ *Intermittent S-A block.* → FIG. P21



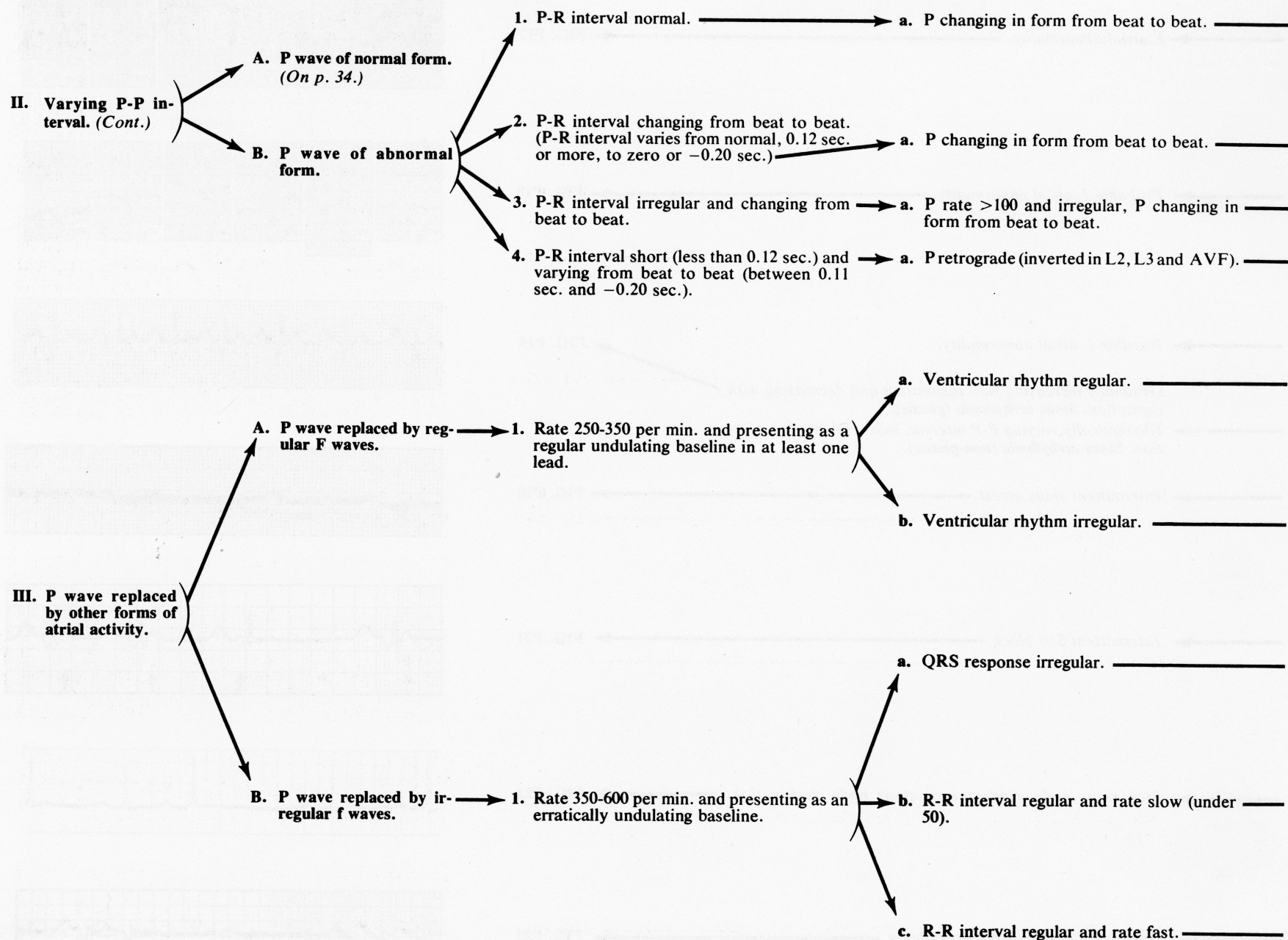
→ *Sick sinus node syndrome or sinus node dysfunction.* → FIG. P22



→ *Bradycardia-tachycardia arrhythmia.* → FIG. P23



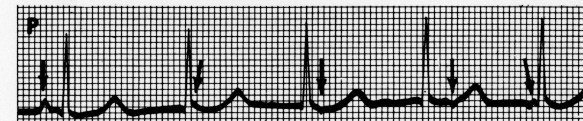
ARRHYTHMIAS—DIAGNOSES BASED ON THE P WAVE OR OTHER ATRIAL ACTIVITY (Cont.)



→ *Wandering atrial pacemaker. (Varying pathways of atrial depolarization?)* → FIG. P24



→ *Wandering pacemaker between S-A node and junctional tissue.* → FIG. P25

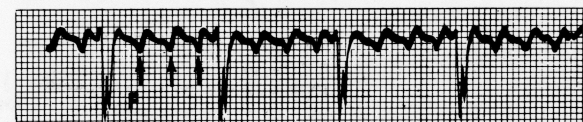


→ *Multifocal atrial tachycardia. (See Fig. P103.)*

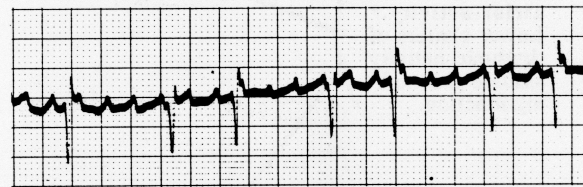
→ *Wandering pacemaker within the junctional tissue.* → FIG. P26



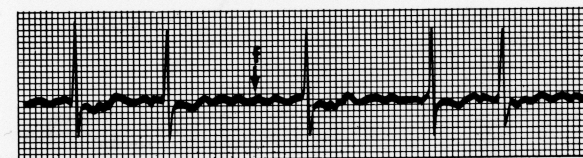
→ *Atrial flutter with fixed block. (Ventricular rate varies, depending on degree of block. See R-R interval section.)* → FIG. P27



→ *Atrial flutter with varying block.* → FIG. P28



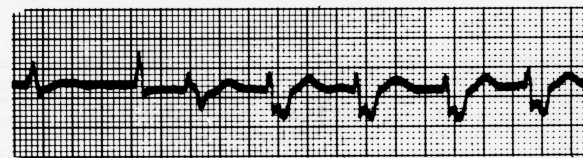
→ *Atrial fibrillation.* → FIG. P29

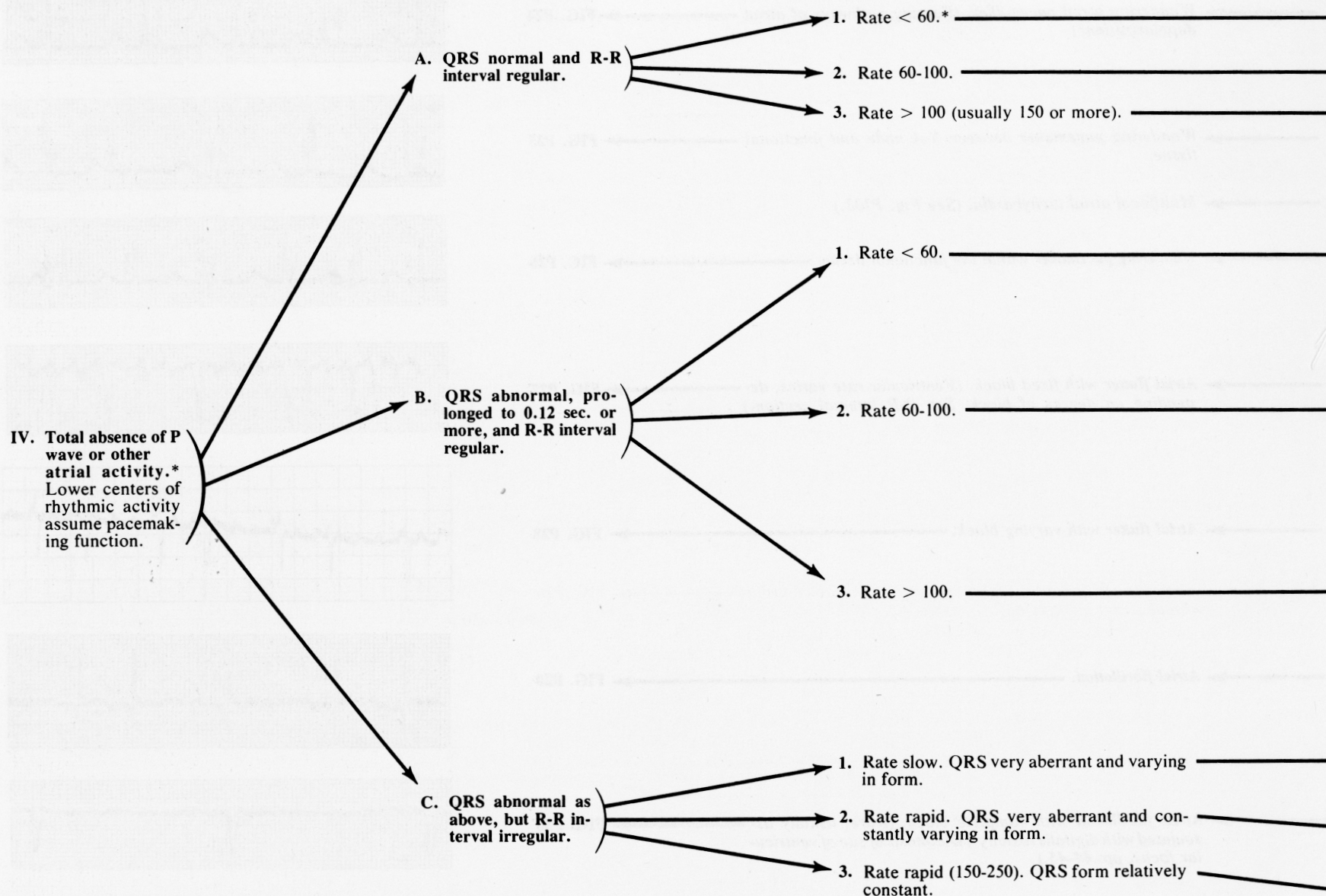


→ *Atrial fibrillation with complete block. (Rare, usually associated with digitalis toxicity.) Diagnosis of site of ventricular focus, pp. 44-45.)* → FIG. P30



→ *Atrial fibrillation with junctional tachycardia (usually digitalis toxicity).* → FIG. P31





*P waves may not be visualized in the standard 12 lead electrocardiogram for two reasons: (1) There may be no atrial activity due to sinoatrial arrest or sinoatrial block. In such cases the diagnosis is based on the QRS rate, regularity and form. These rhythms are usually slow and include, principally, the idioventricular rhythms with pacemakers either above or below the bifurcation of the bundle of His. (2) Atrial activity may be present but is not visible because it is concealed in the QRS complex or the T wave. These rhythms are usually associated with rapid ventricular rates and include, primarily, paroxysmal tachycardias of supraventricular or ventricular origin.

Exploratory leads may aid in locating the P waves not visualized in the standard ECG

→ **Junctional rhythm or idioventricular rhythm with pacemaker above bifurcation of bundle of His.** → **FIG. P32**

→ **Junctional rhythm without retrograde conduction.**

→ **Supraventricular tachycardia (the P wave may be buried in the QRS or in the T wave of the preceding complex).** → **FIG. P33**

→ **Idioventricular rhythm with pacemaker below bifurcation of bundle of His.** → **FIG. P34**

→ **Rapid idioventricular rhythm, possibly secondary to hyperkalemia (T waves usually tall and peaked).** → **FIG. P35**

→ **Ventricular tachycardia (or supraventricular tachycardia with aberrant conduction).** → **FIG. P36**

→ **Chaotic heart action (agonal state).** → **FIG. P37**

→ **Ventricular fibrillation.**

→ **Ventricular tachycardia (R-R interval only slightly irregular).** → **FIG. P38**

