

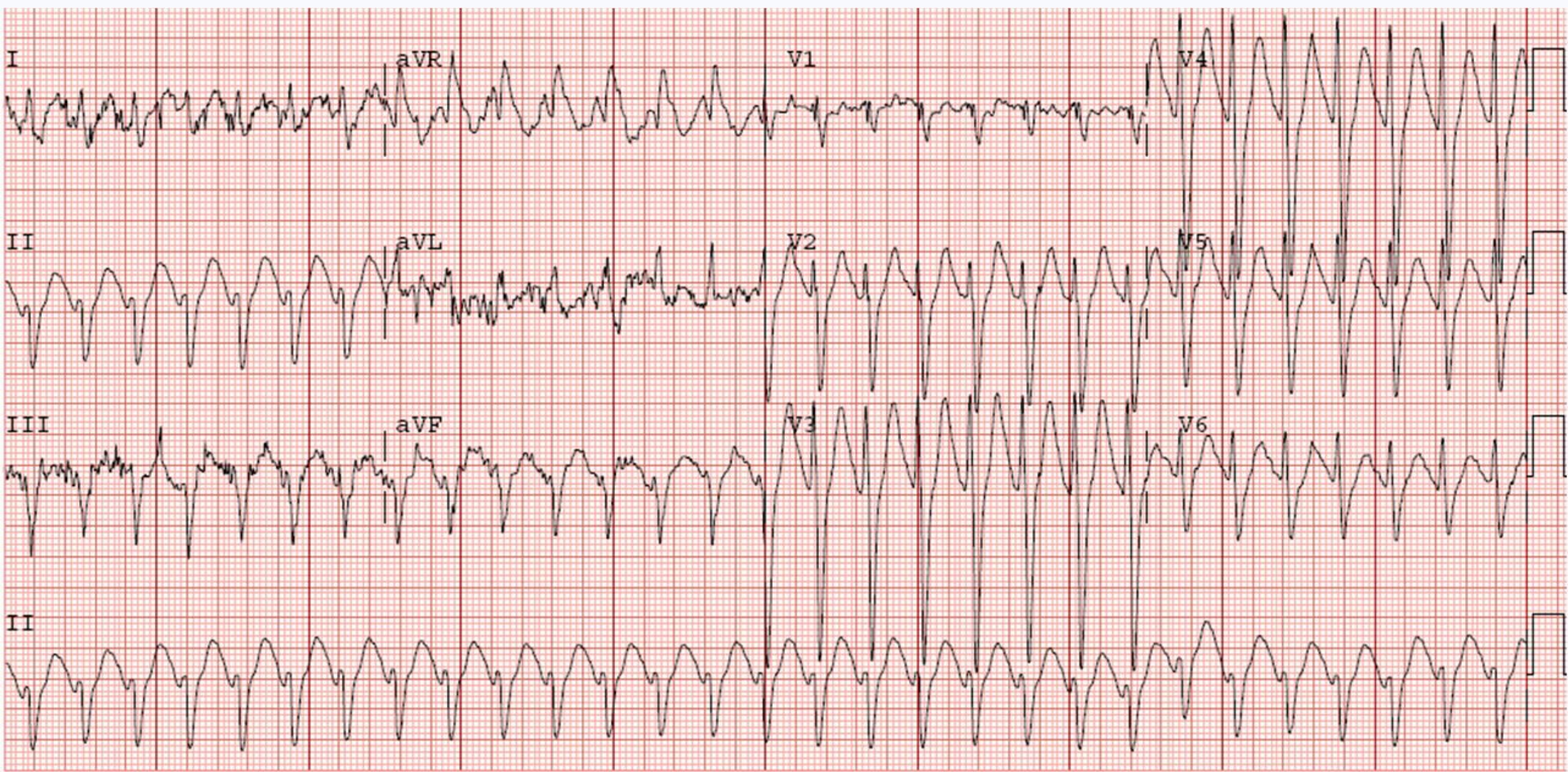
БАРЛЫҒЫ ЭКГ ЖАЙЫНДА

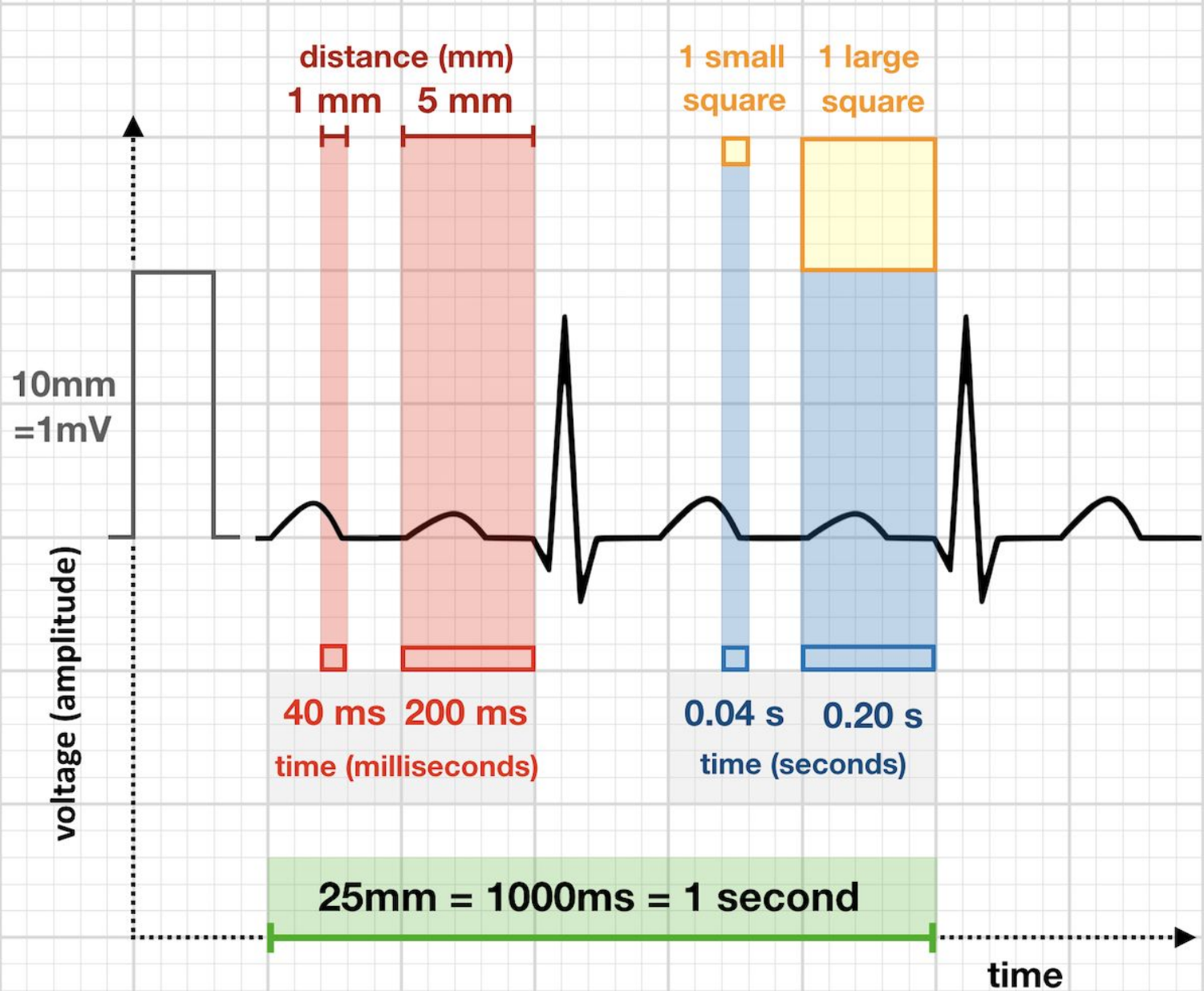
ЕСКЕРТУ!!!
СЛАЙД БЕРІЛМЕЙДІ

ЖОСПАР

- ЭКГ базистері
- Гипертрофиялар
- Алғашқы ЭКГ талдау
- Миокард инфаркты
- Ырғақ бұзылыстары
- “СМЕРТЕЛЬНЫЕ экг”

ЭКГ қиын ба?





Speed: 25 mm/sec

Chest/Limb: 10 mm/mV

Парақ жылдамдығы:

25mm/sec:

1mm (*кіші клетка*) =
0.04 sec (40ms)

5mm (*үлкен клетка*) =
0.2 sec (200ms)

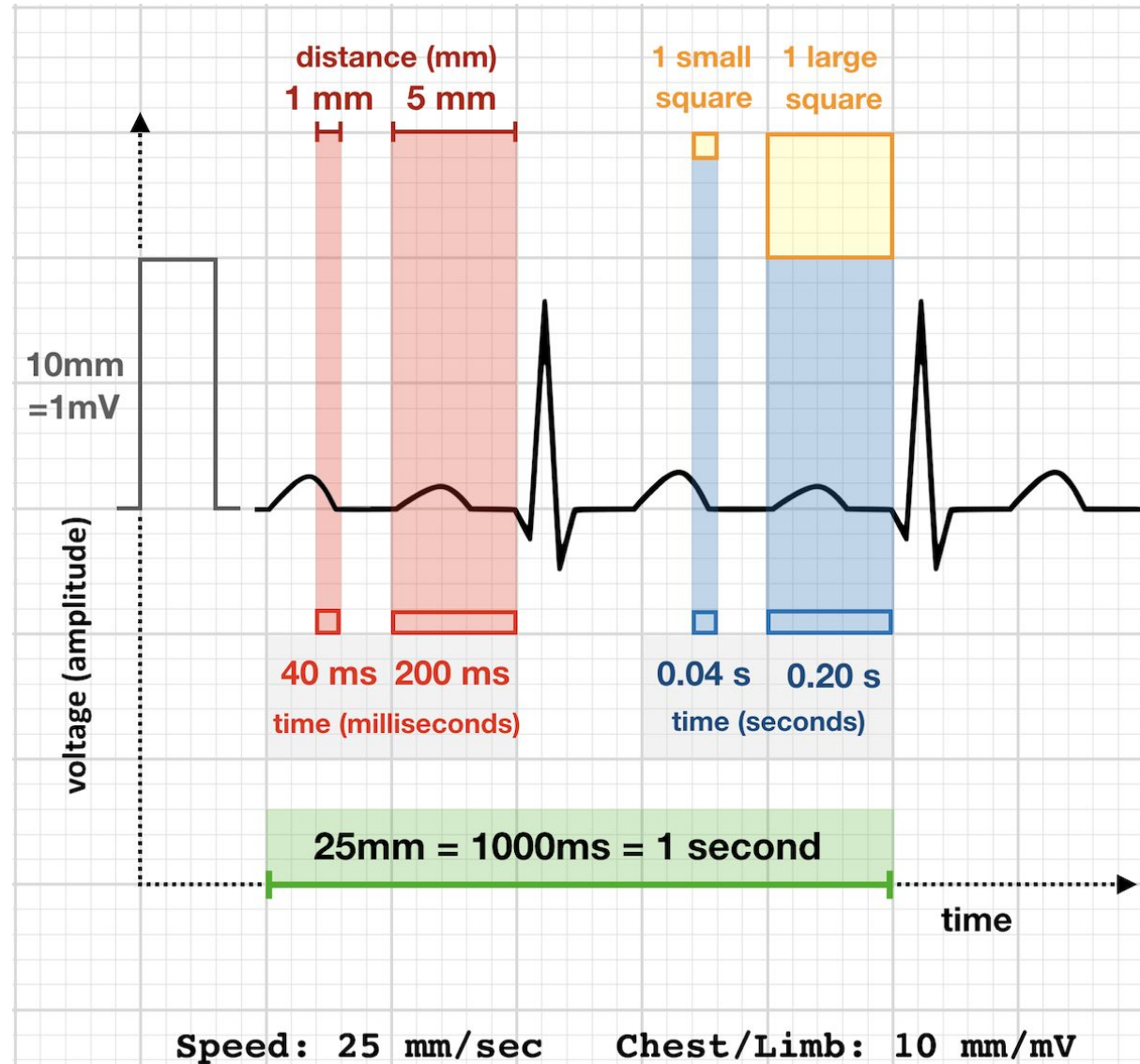
Парақ

жылдамыдығы:

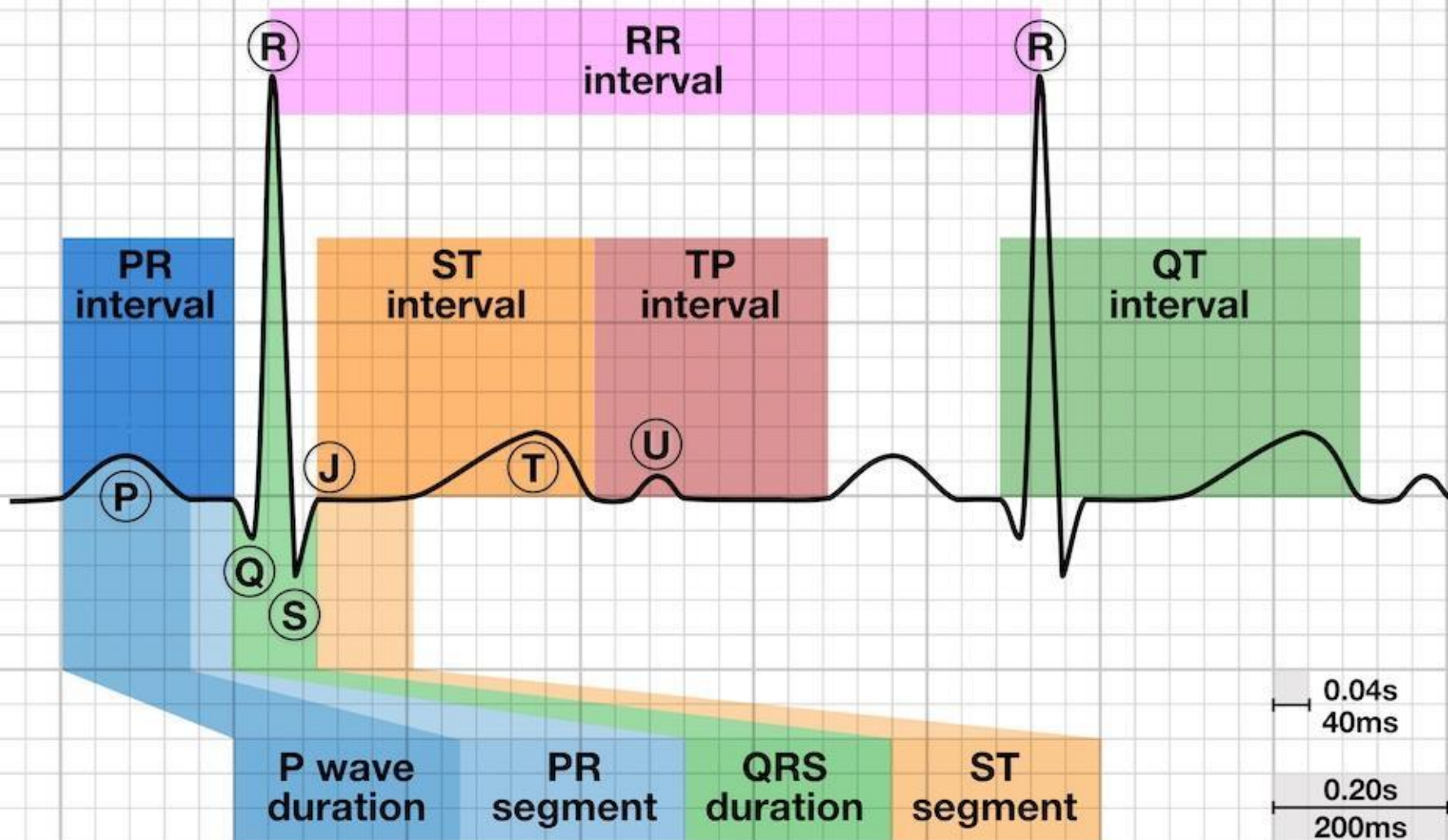
50mm/sec

1mm (*кіші клетка*) =
0.02 sec (20ms)

5mm (*үлкен клетка*) =
0.1 sec (100ms)

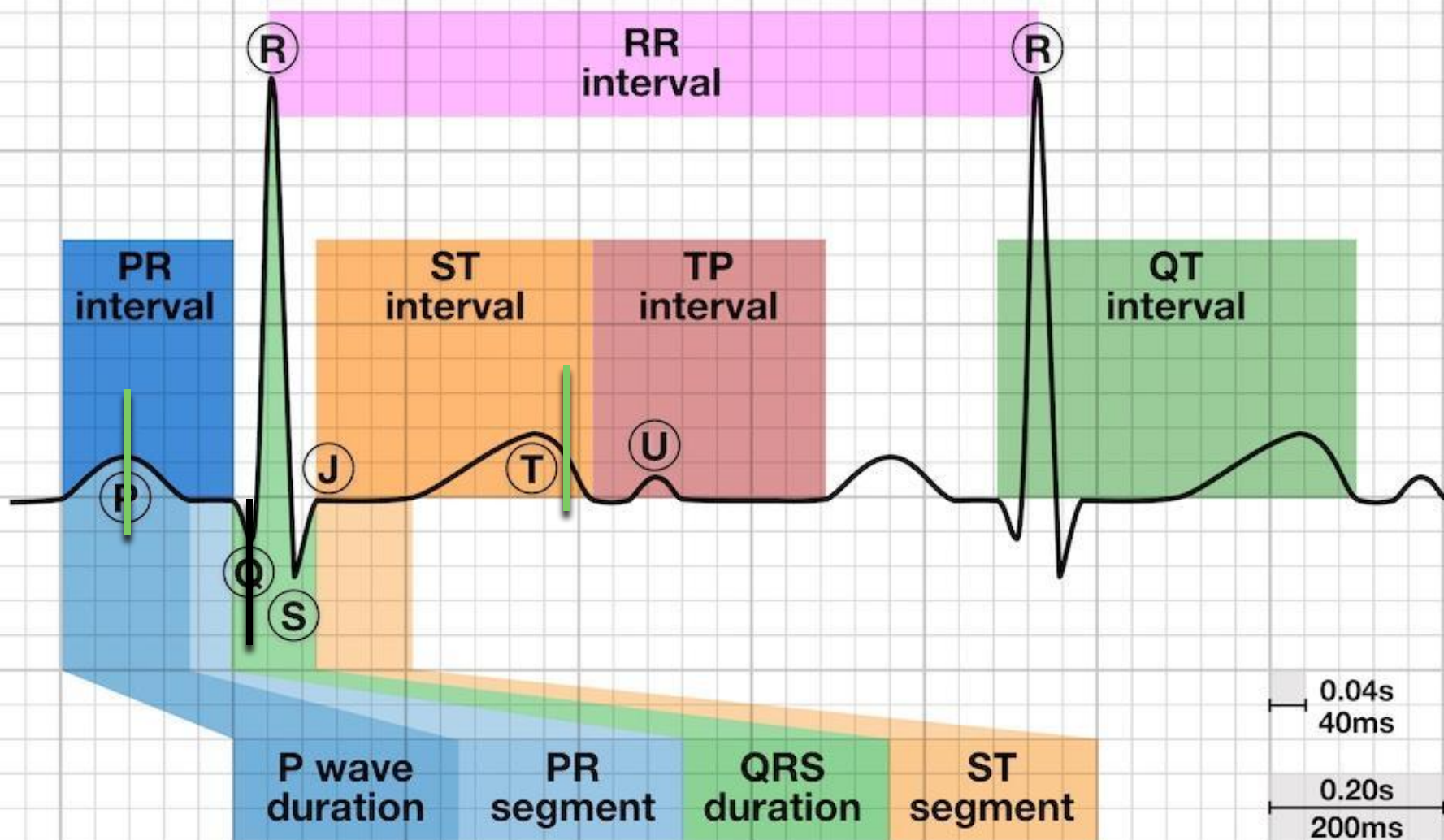


Интервал, сегмент, комплекс

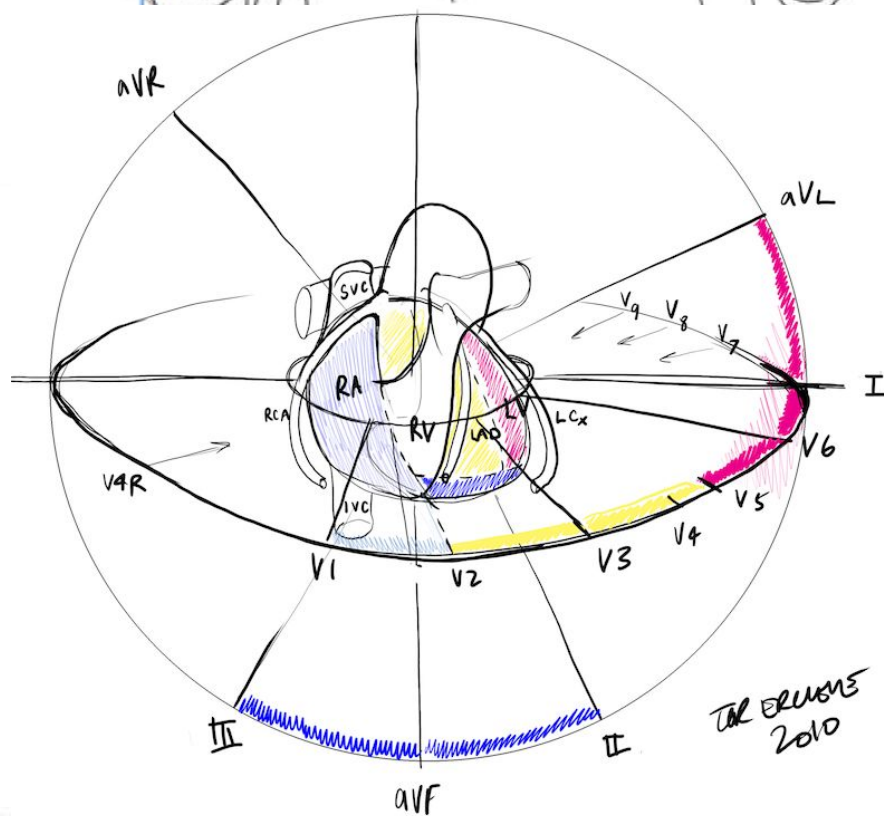
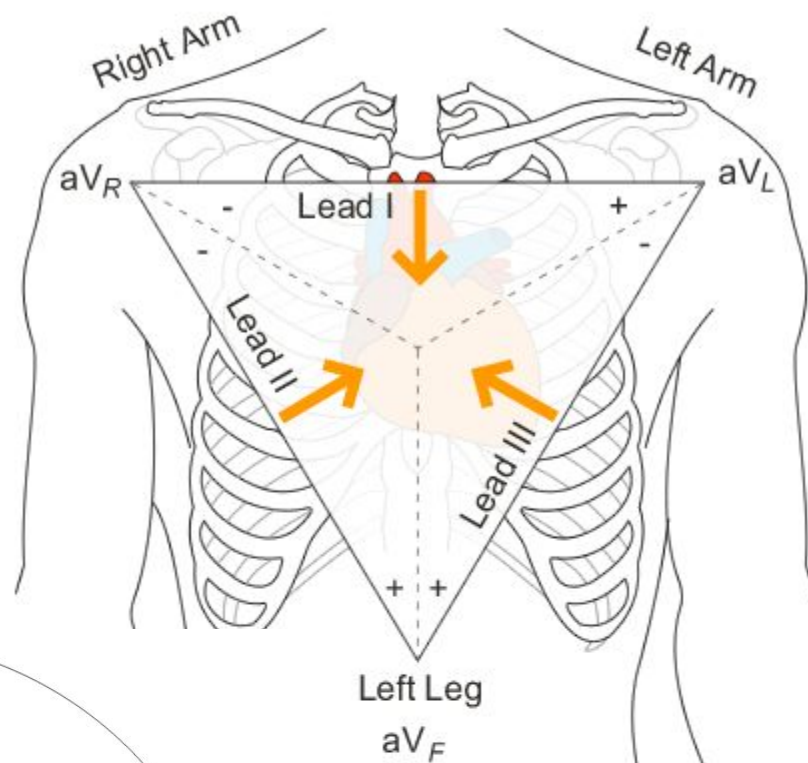
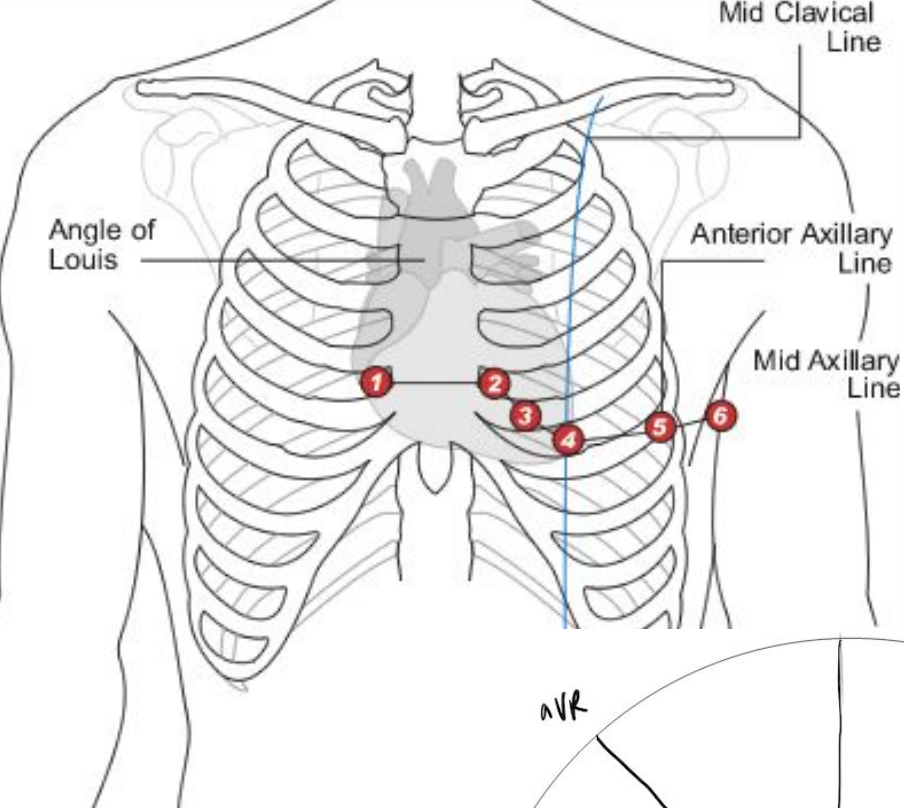


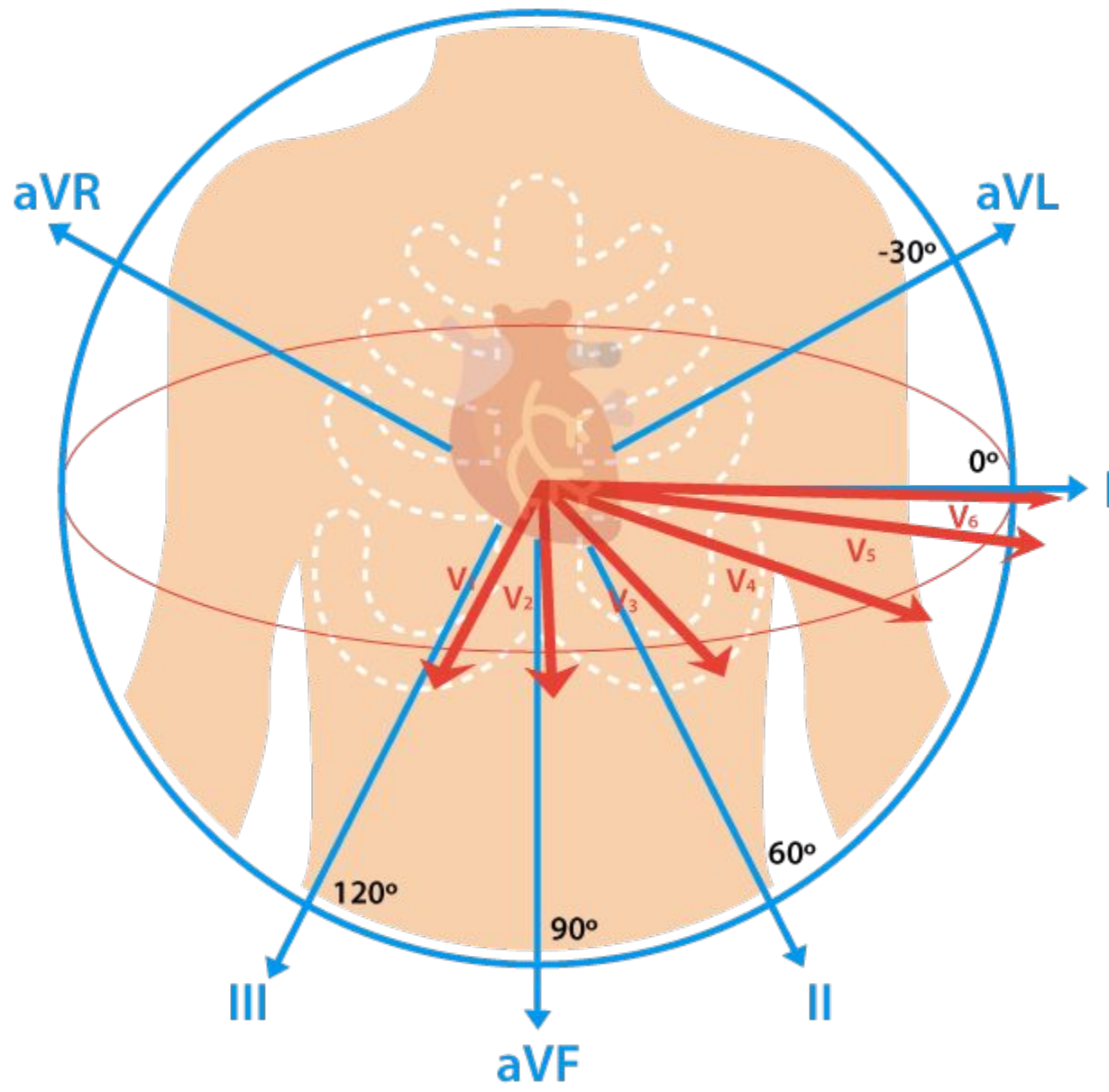
Speed: 25 mm/sec

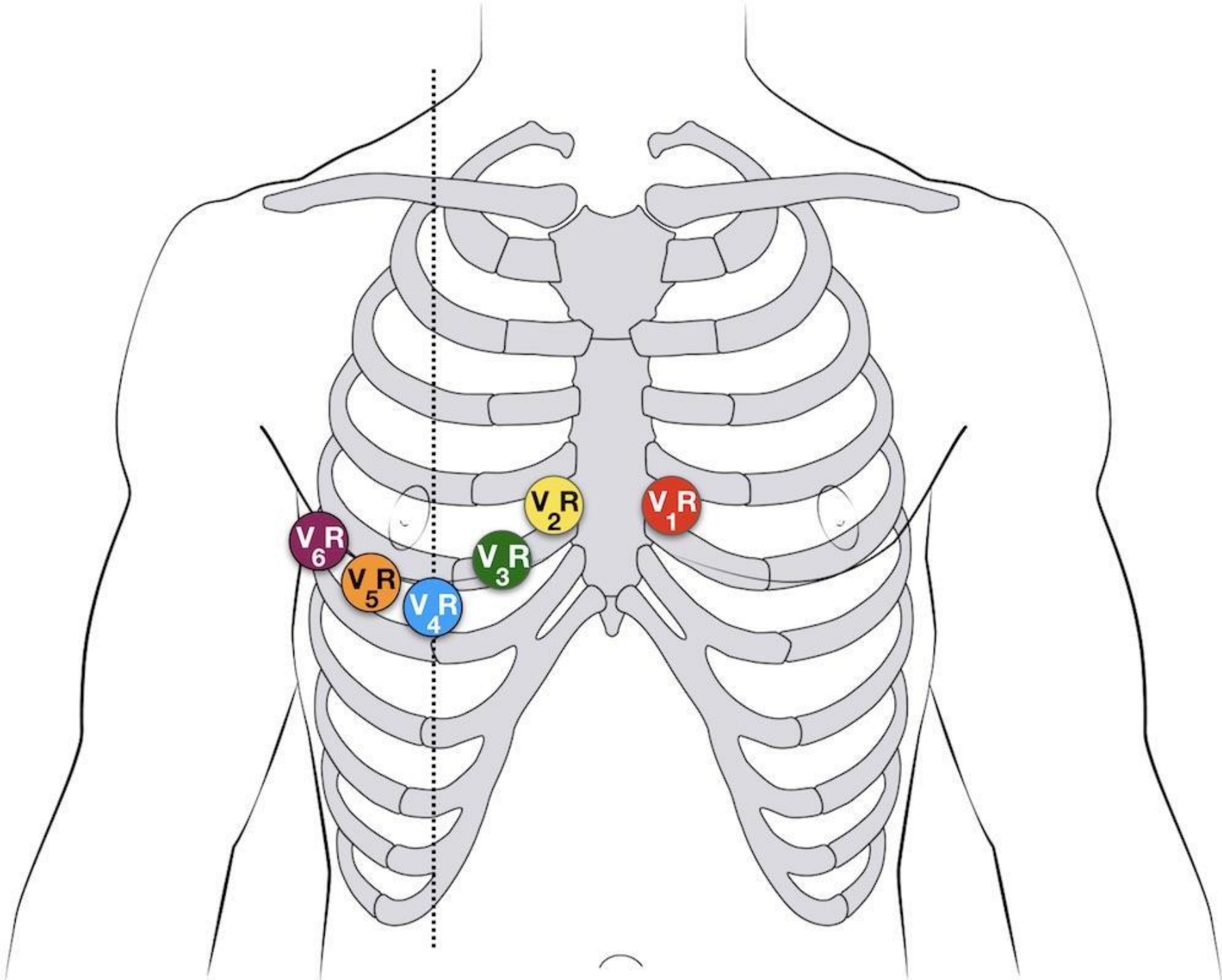
Интервал, сегмент, комплекс

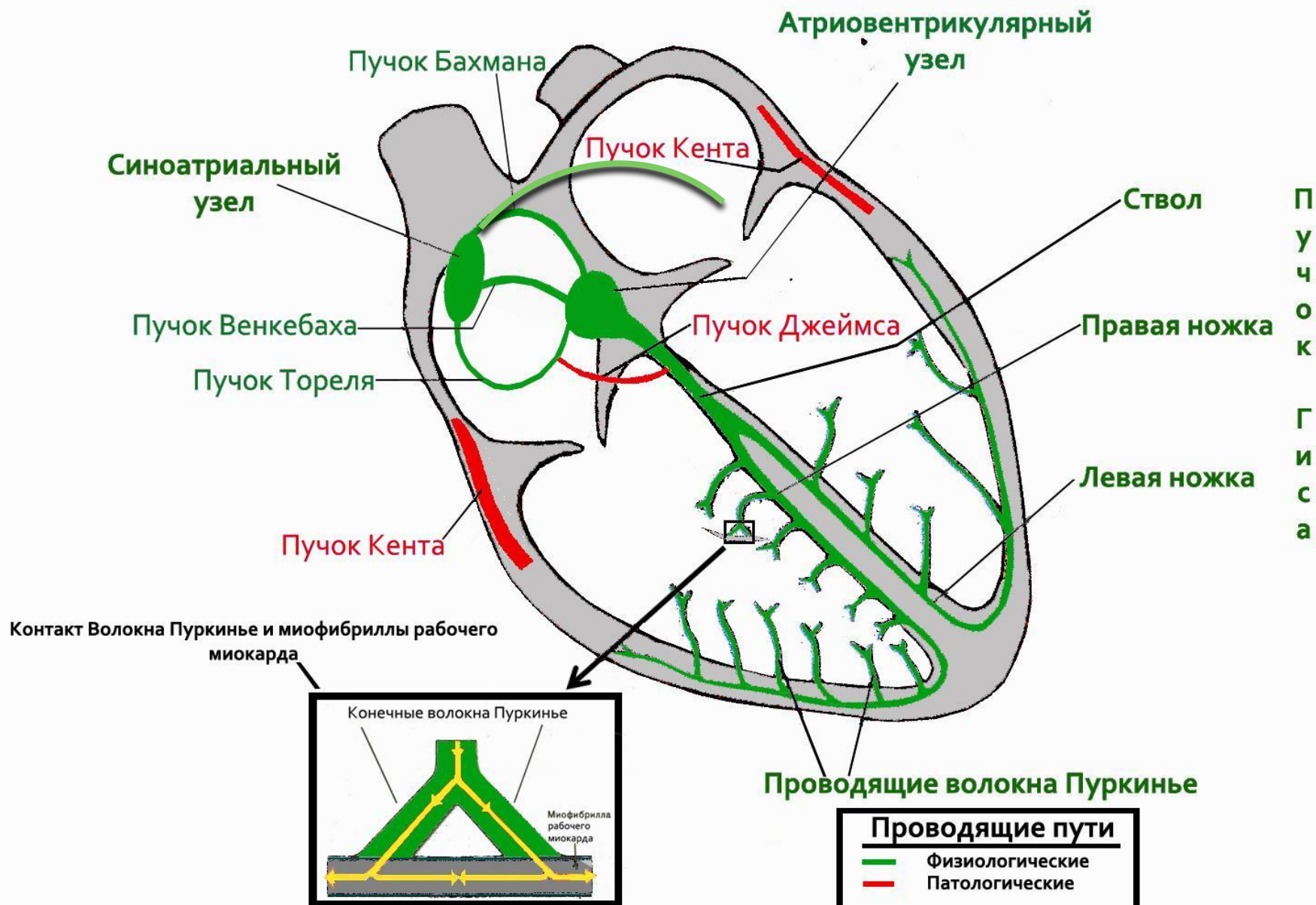


Speed: 25 mm/sec

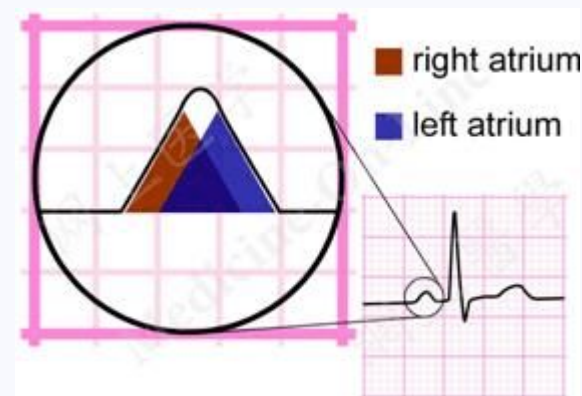
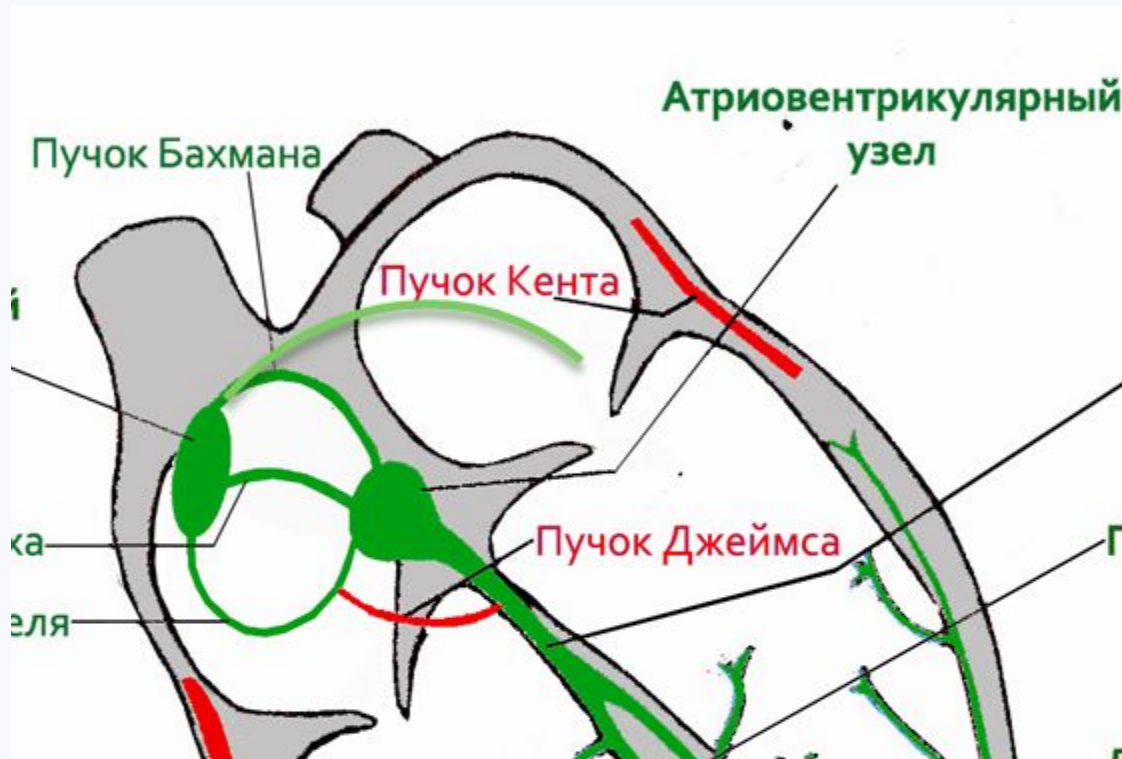








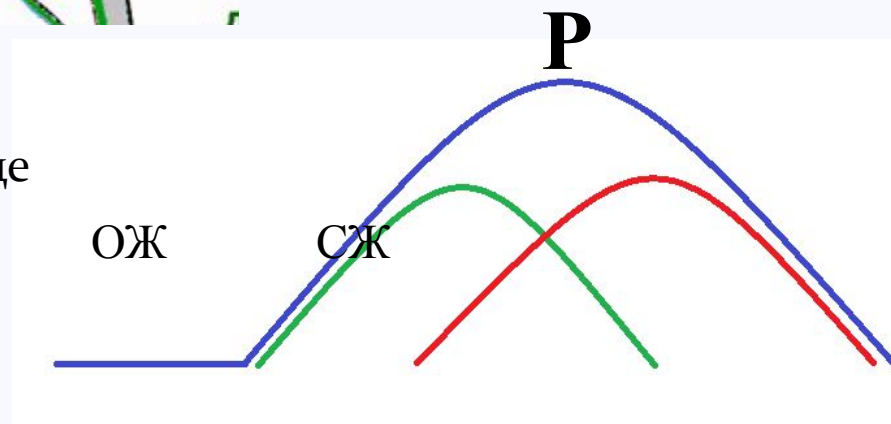
- Р тісшесі ЭКГ ең бірінші оң мәнді тісше болып саналады, ол жүрекшелердің деполяризациясын білдіреді және уақыты $< 0.12 \text{ ms}$ ($< 120 \text{ ms}$ не 3 кіші клетка)



Амплитуда:

$< 2.5 \text{ mm}$ (0.25 mV) аяқ – қол тіркемелерінде

$< 1.5 \text{ mm}$ (0.15 mV) кеуде тіркемелерінде





I



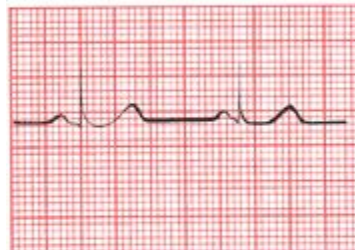
aVR



V₁



V₄



II



aVF



V₂



V₅



III



aVL



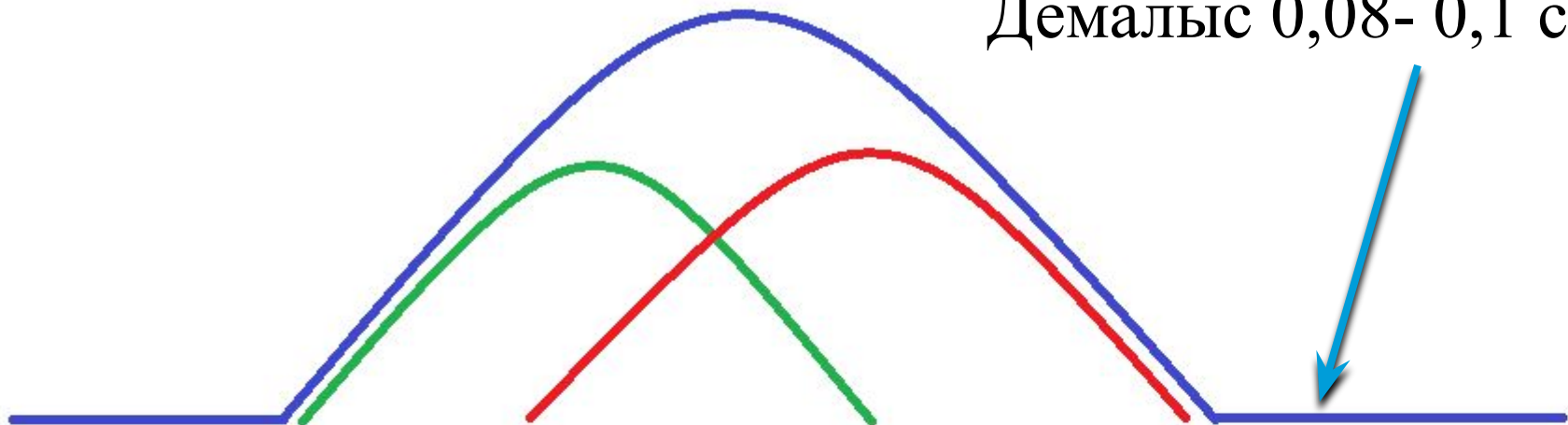
V₃



V₆

- V1 тіркемесінде әдетте бифазалы
- Үнемі aVR теріс мәнді

Демалыс 0,08- 0,1 секунд



Cardiology Teaching Package

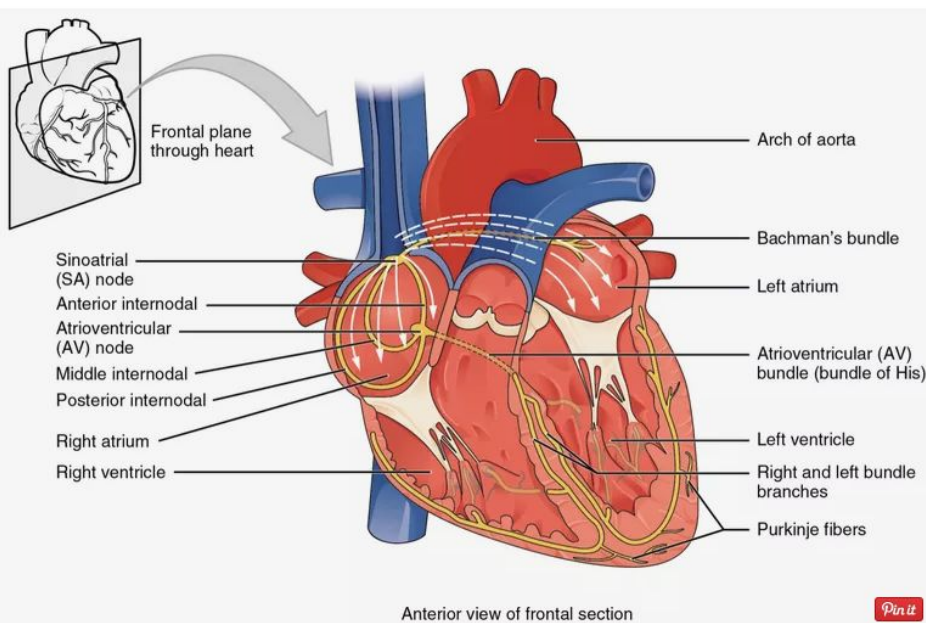
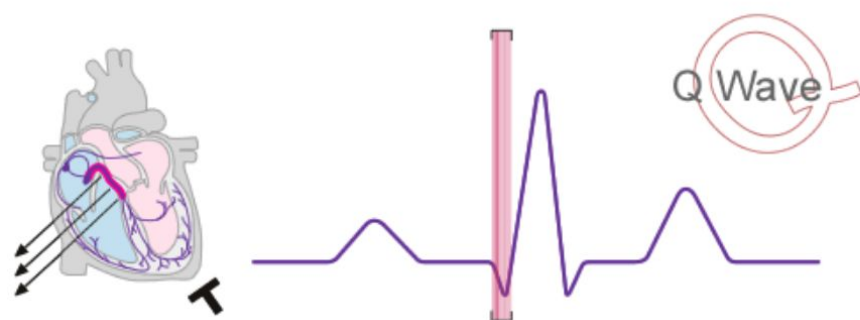
A Beginners Guide to Normal Heart Function, Sinus Rhythm & Common Cardiac Arrhythmias

The Q Wave

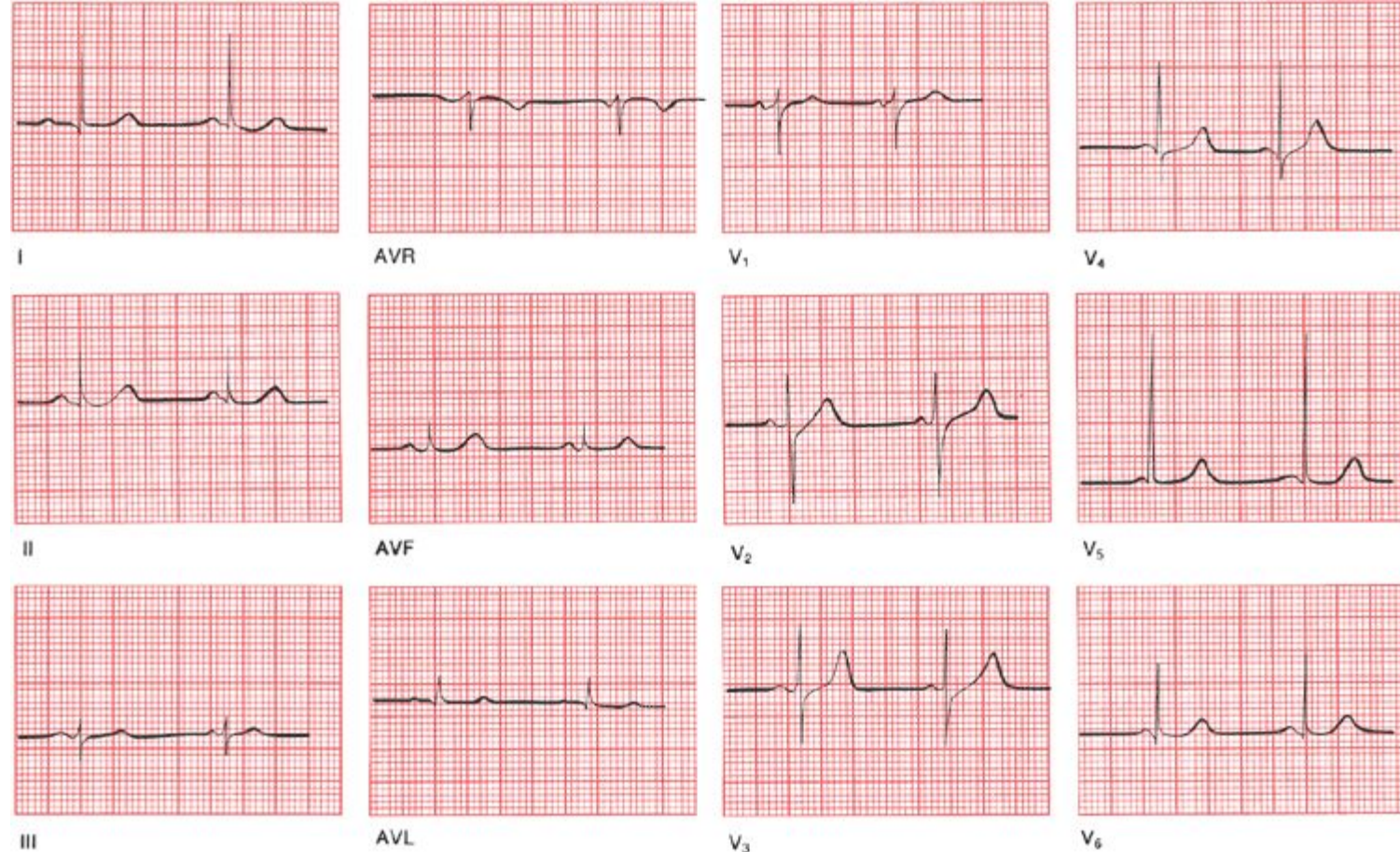
The picture below shows a small negative wave immediately before the large QRS complex. This is known as a Q wave and represents depolarisation in the septum.

Whilst the electrical stimulus passes through the bundle of His, and before it separates down the two bundle branches, it starts to depolarise the septum from left to right. This is only a small amount of conduction (hence the Q wave is less than 2 small squares), and it travels in the opposite direction to the main conduction (right to left) so the Q wave points in the opposite direction to the large QRS complex.

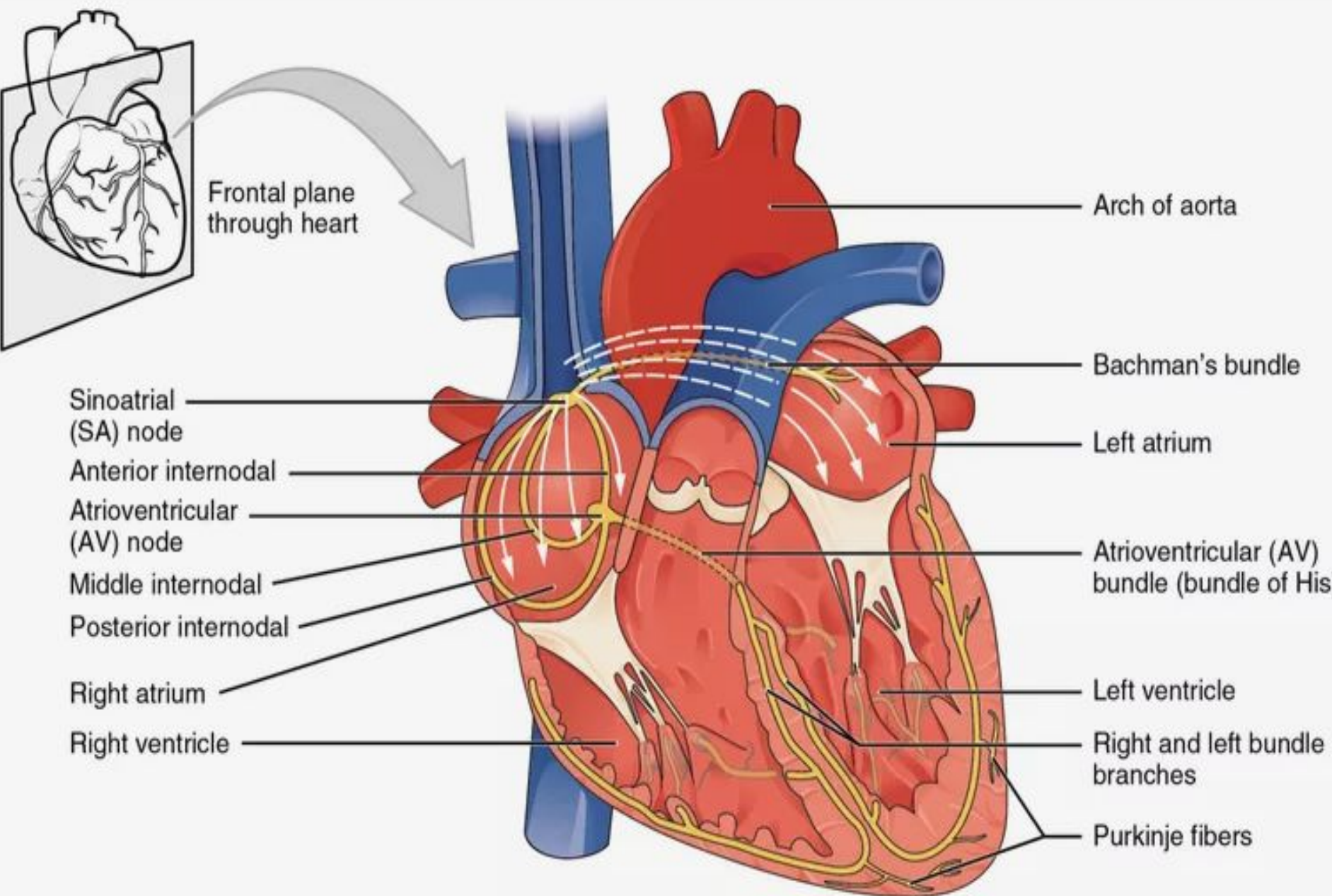
Image: Q Wave



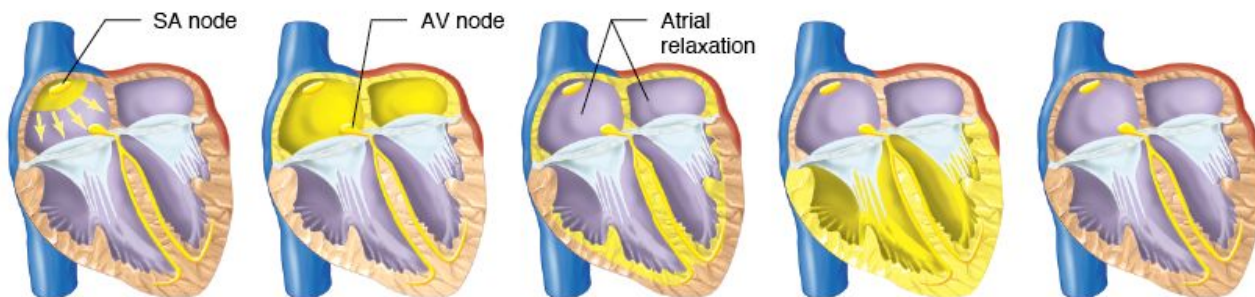
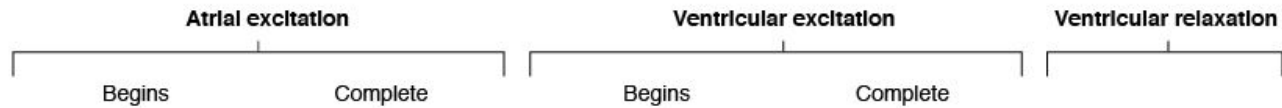
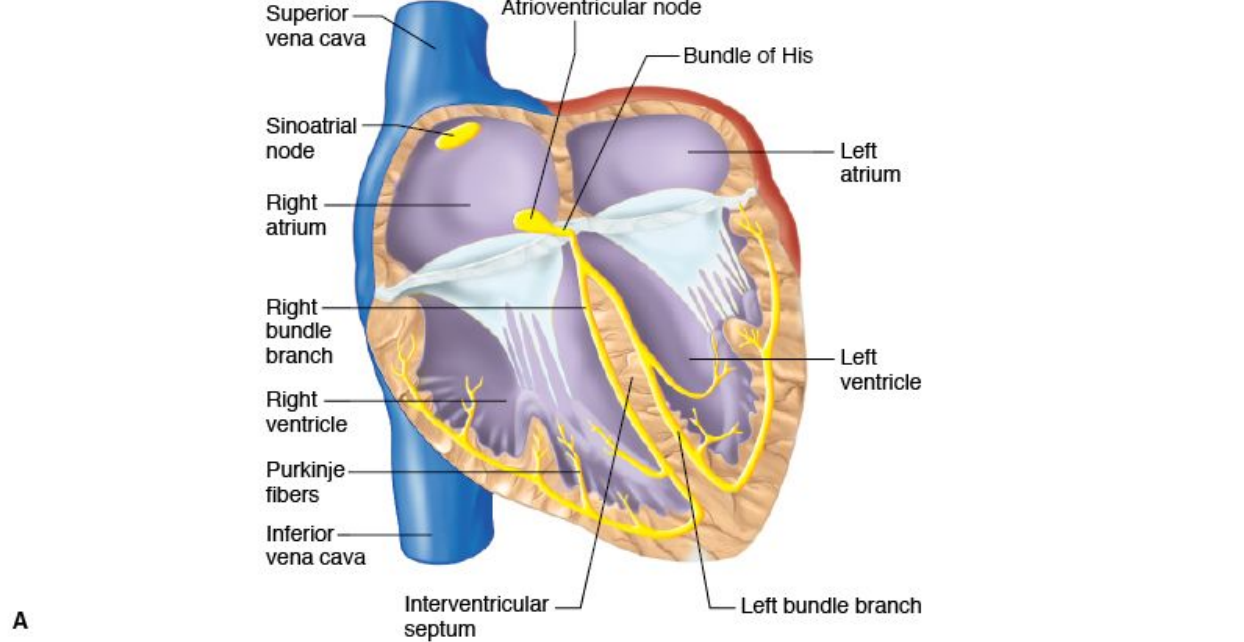
Аудармасы: на рисунке ниже показана небольшая отрицательная волна непосредственно перед большим комплексом QRS. Это известно как волна Q и представляет деполяризацию в перегородке. В то время как электрический стимул проходит через его пучок, и прежде чем он отделяет вниз две ветви пучка, он начинает деполяризовать перегородку слева направо. Это лишь небольшое количество проводимости (следовательно, Q-волна меньше 2 малых квадратов), и она движется в противоположном направлении к основной проводимости (справа налево), поэтому Q-волна указывает в противоположном направлении к большому комплексу QRS.



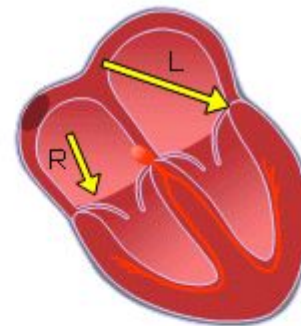
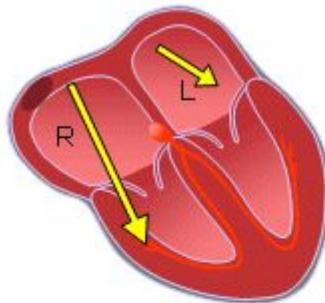
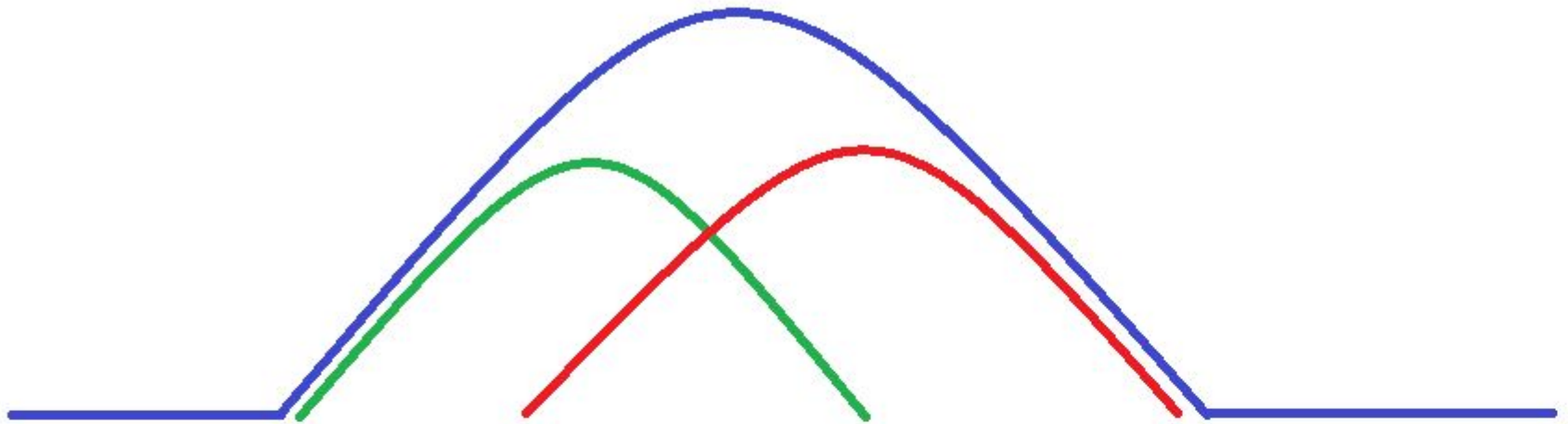
- Кішкентай тісшелері көбіне қалыпты
- Q тісшесінің III және aVR тіркемелерінде >2 mm болуы қалыпты болып саналады
- V₁, V₂, V₃ тірکمелерінде Q тісшесінің көрінбеуі қалыпты

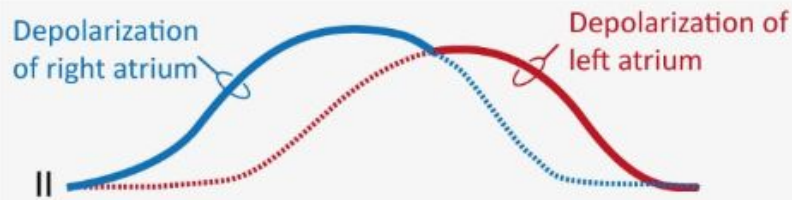


Anterior view of frontal section

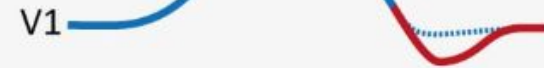


Жүрекшелер гипертрофиясы





The P-wave is always positive in lead II if the rhythm is sinus rhythm. The P-wave may, however, display two humps, as shown here. This is due to the fact that the atria are not depolarized (activated) simultaneously.



The P-wave in lead V1 may be biphasic, due to the negative deflection caused by depolarization of the left atrium (the electrical vector is directed away from V1).

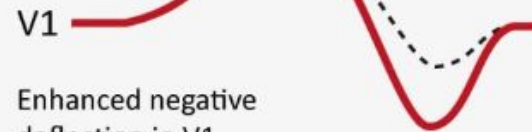
Abnormal P-waves

P-mitrale

P mitrale is a consequence of left atrial enlargement (often caused by mitral stenosis). Enlargement of the left atrium amplifies its contribution to the contour of the P wave.



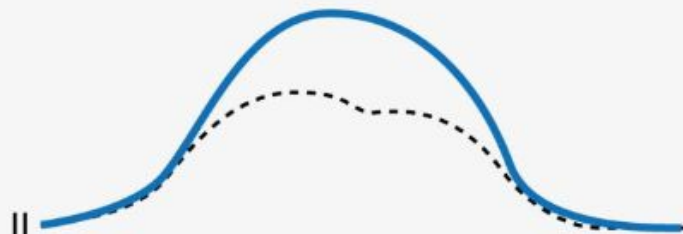
Enhanced second hump in lead II.



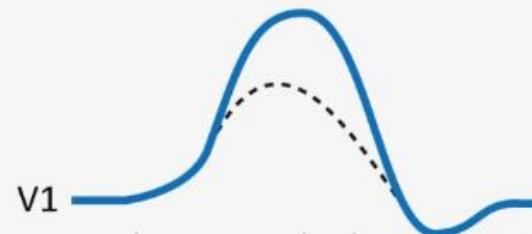
Enhanced negative deflection in V1.

P-pulmonale

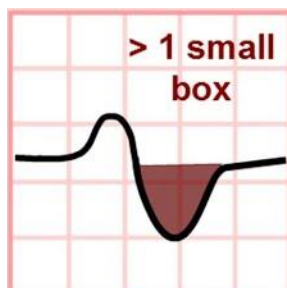
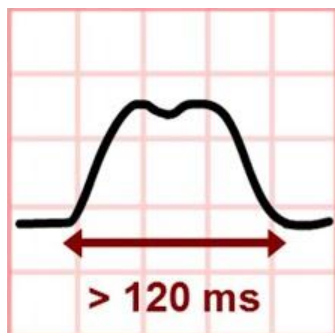
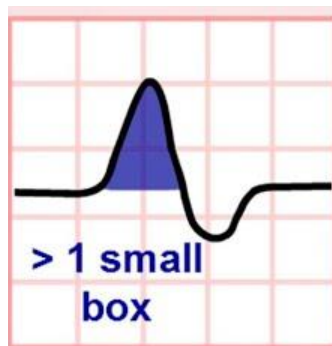
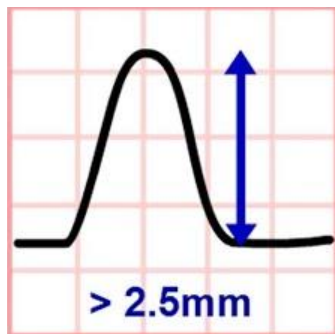
P pulmonale is a consequence of right atrial enlargement. This is often a consequence of pulmonary valve stenosis or increased resistance in the pulmonary circulation. Enlargement of the right atrium causes an increased P wave amplitude in both leads.



Increased P wave amplitude.



Increased P wave amplitude.

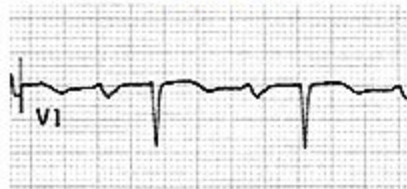


	II	V1
Normal		
RAE		
LAE		
RAE + LAE		

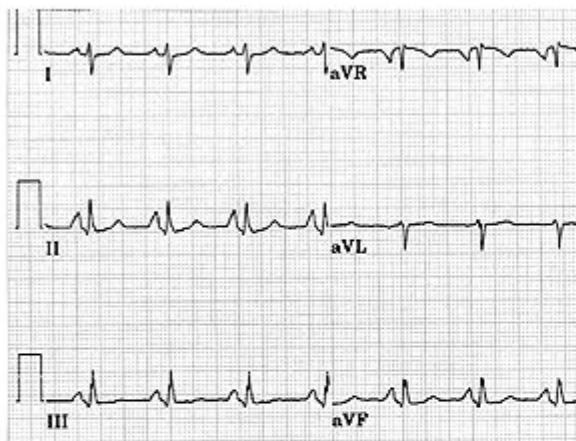
Lead II



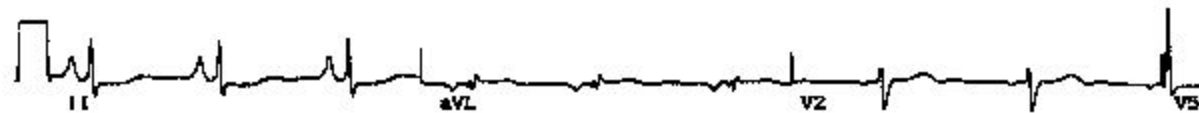
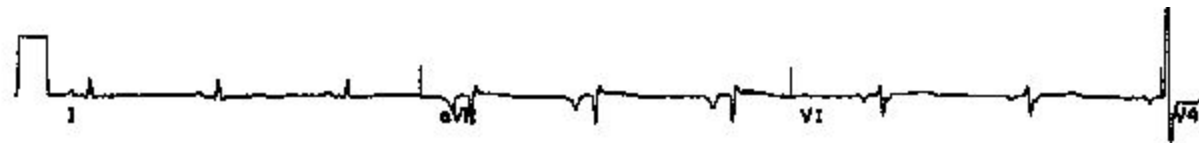
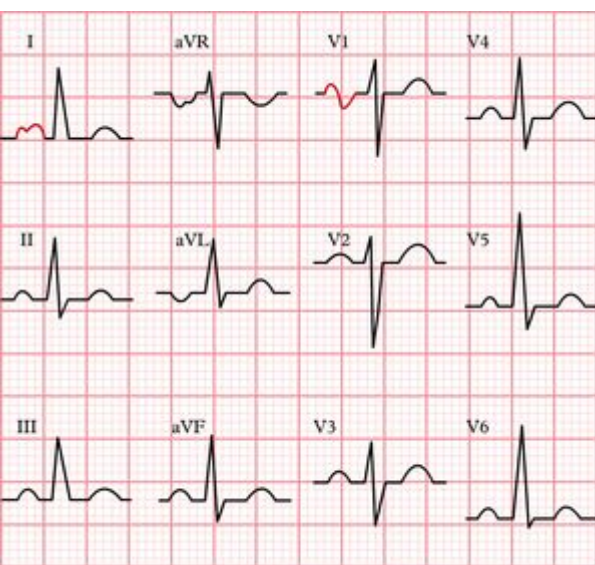
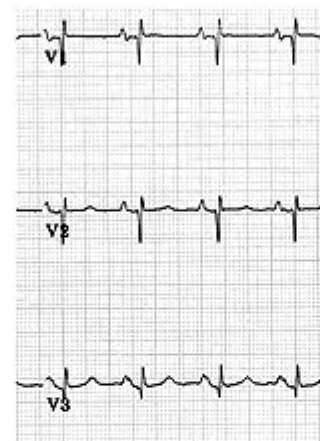
Lead V₁



© 1997 Frank G. Yanowitz, M.D.



© 1997 Frank G. Yanowitz, M.D.



Қарыншалар гипертрофиясы

Left Ventricular Hypertrophy Overview

- The left ventricle hypertrophies in response to pressure overload secondary to conditions such as aortic stenosis and hypertension.
- This results in increased R wave amplitude in the left-sided ECG leads (I, aVL and V4-6) and increased S wave depth in the right-sided leads (III, aVR, V1-3).

Это приводит к увеличению амплитуды волны R в левосторонних ЭКГ-выводах (I, aVL и V4-6) и увеличению глубины волны S в правосторонних выводах (III, aVR, V1-3).

Limb Leads

R wave in lead I + S wave in lead III > 25 mm
R wave in aVL > 11 mm
R wave in aVF > 20 mm
S wave in aVR > 14 mm

Precordial Leads

R wave in V4, V5 or V6 > 26 mm
R wave in V5 or V6 plus S wave in V1 > 35 mm
Largest R wave plus largest S wave in precordial leads > 45 mm

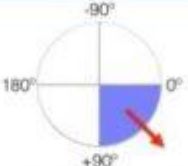
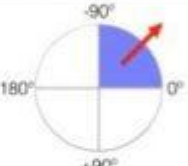
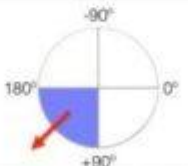
Отведения от конечностей:

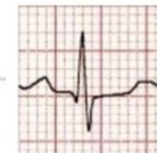
R зубец в отвед I + S зубец в отвед. III > 25 мм
зубец R в aVL > 11 mm
зубец R в aVF > 20mm
зубец S в aVR > 14 mm

Грудных Отведениях:

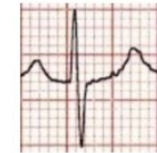
зубец R в V4, V5 или V6 > 26 mm
зубец R в V5 или V6 плюс волна S в V1 > 35mm

Самая большая зубец R плюс самая большая зубец S в груд. отвед. > 45mm

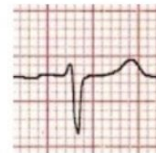
Lead 1	Lead aVF	Quadrant	Axis
POSITIVE	POSITIVE		Normal Axis (0 to +90°)
POSITIVE	NEGATIVE		**Possible LAD (0 to -90°)
NEGATIVE	POSITIVE		RAD (+90° to 180°)
NEGATIVE	NEGATIVE		Extreme Axis (-90° to 180°)



POSITIVE
[R > S]



EQUIPHASIC
[R = S]



NEGATIVE
[R < S]

Lead I



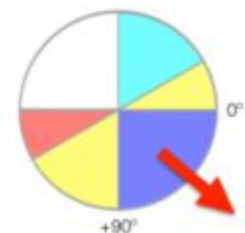
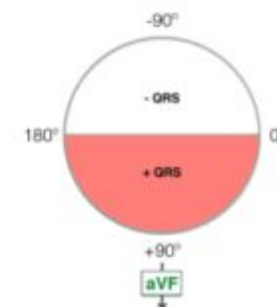
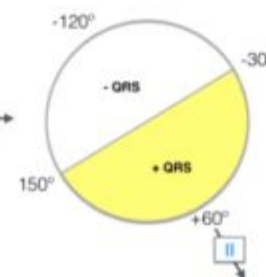
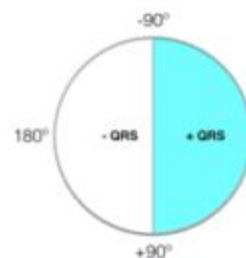
Lead II

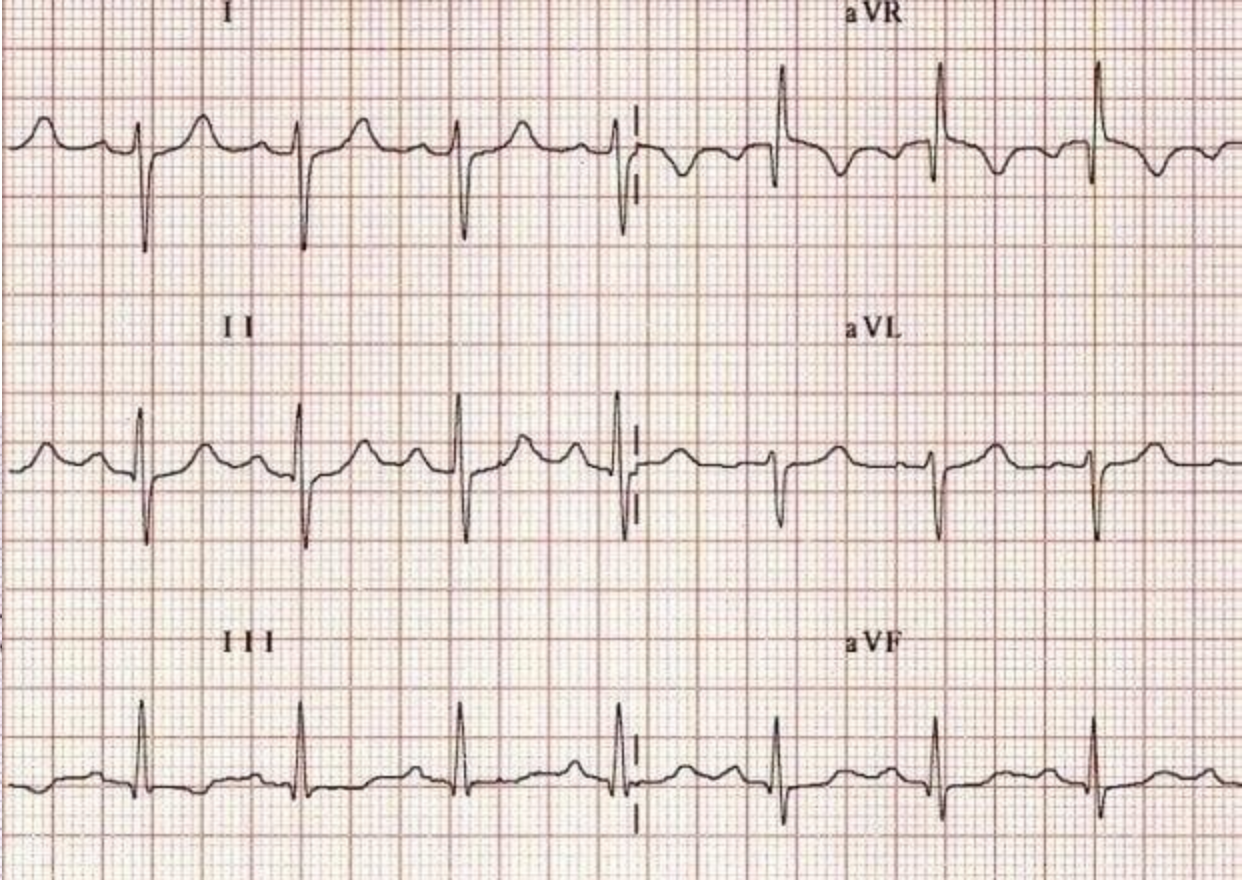
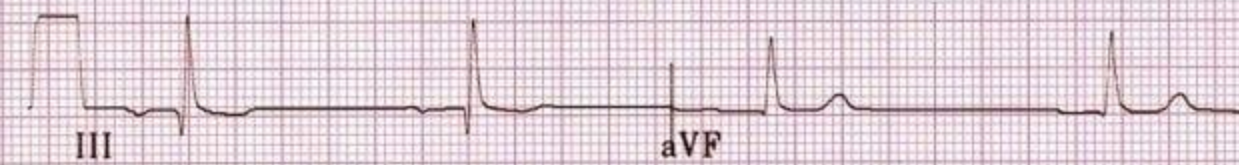
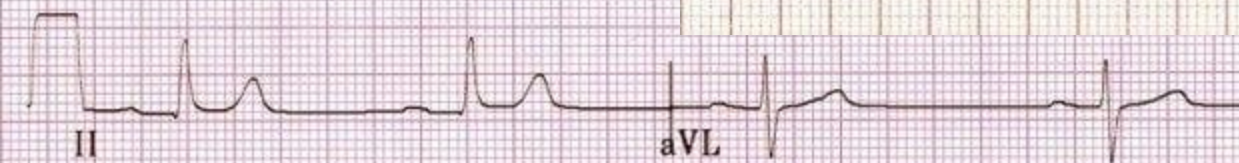


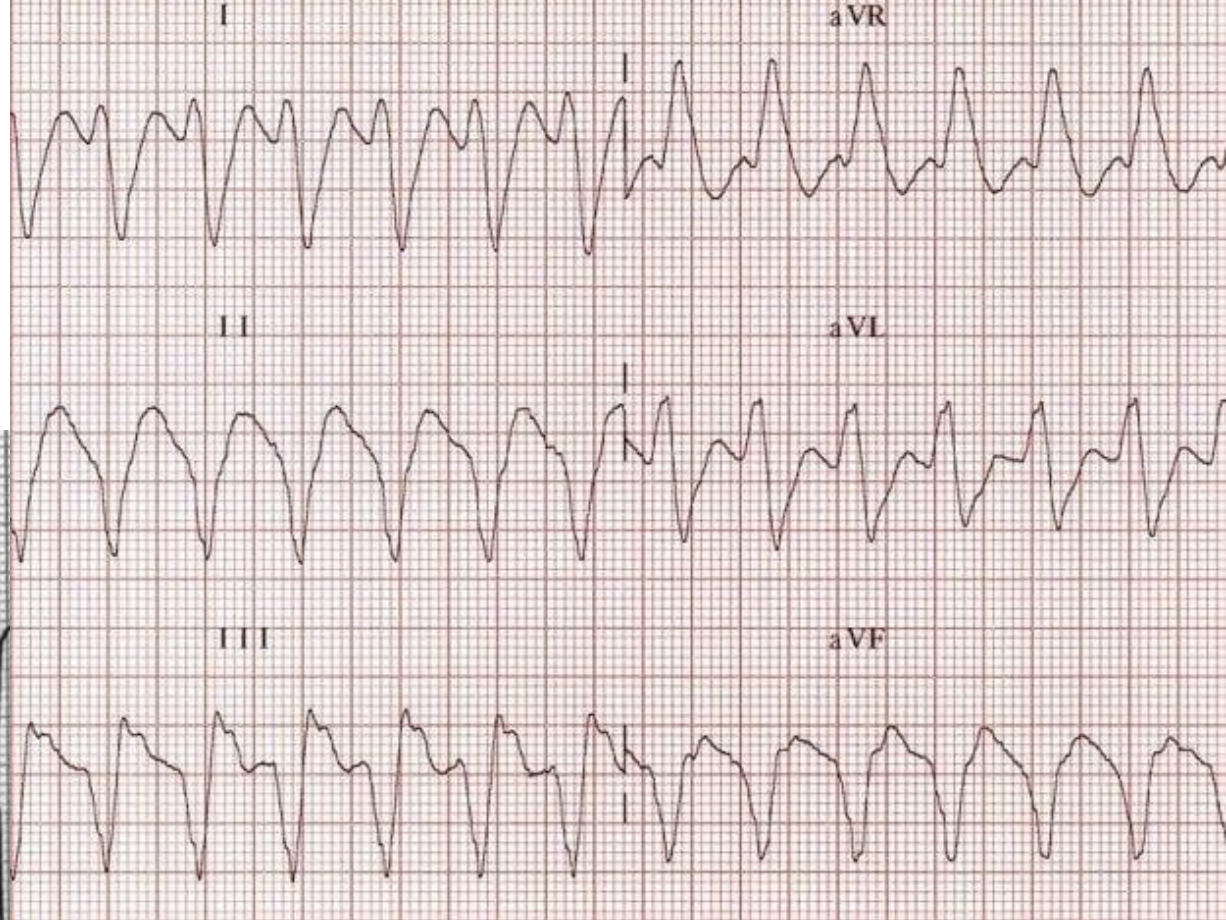
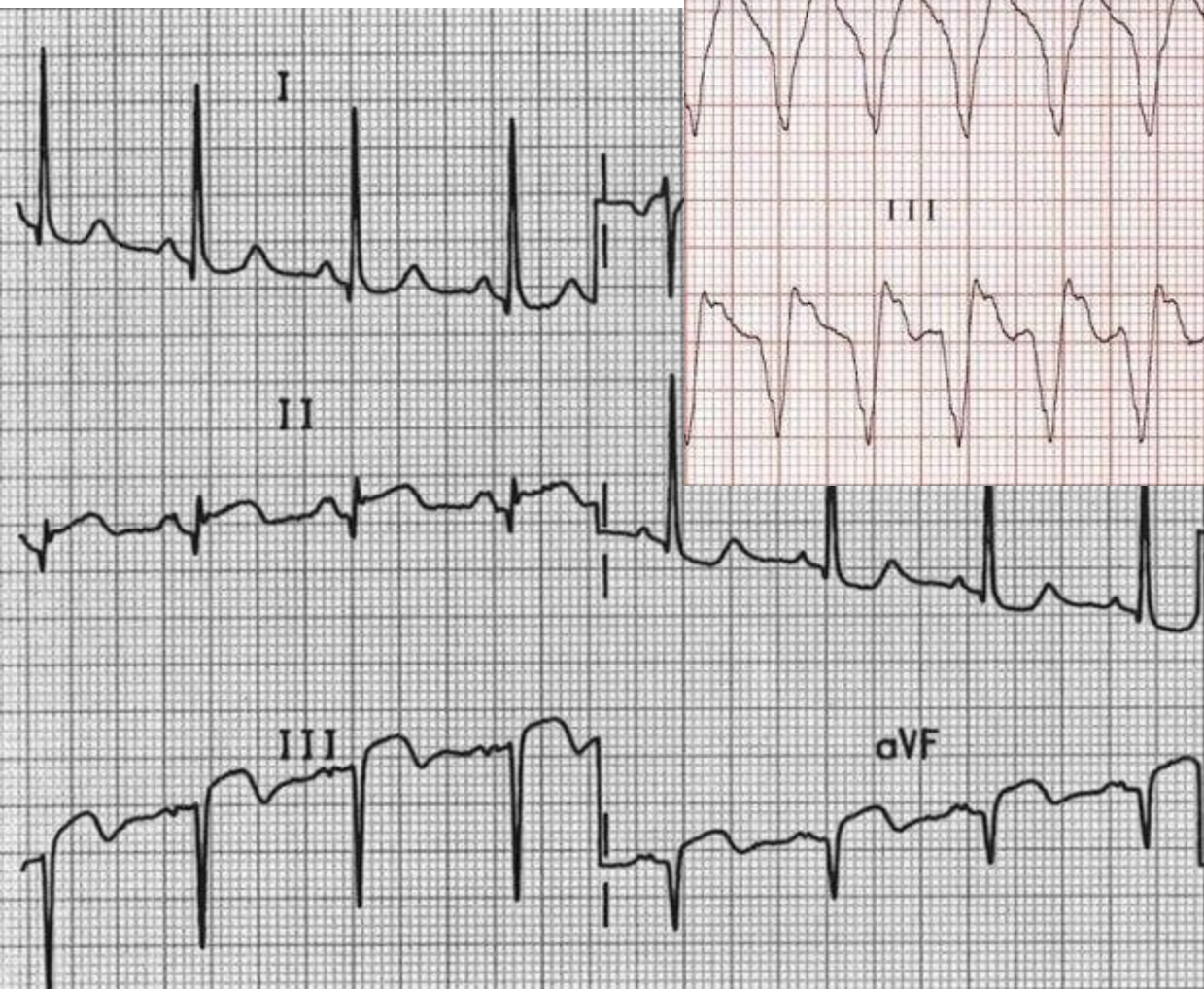
aVF

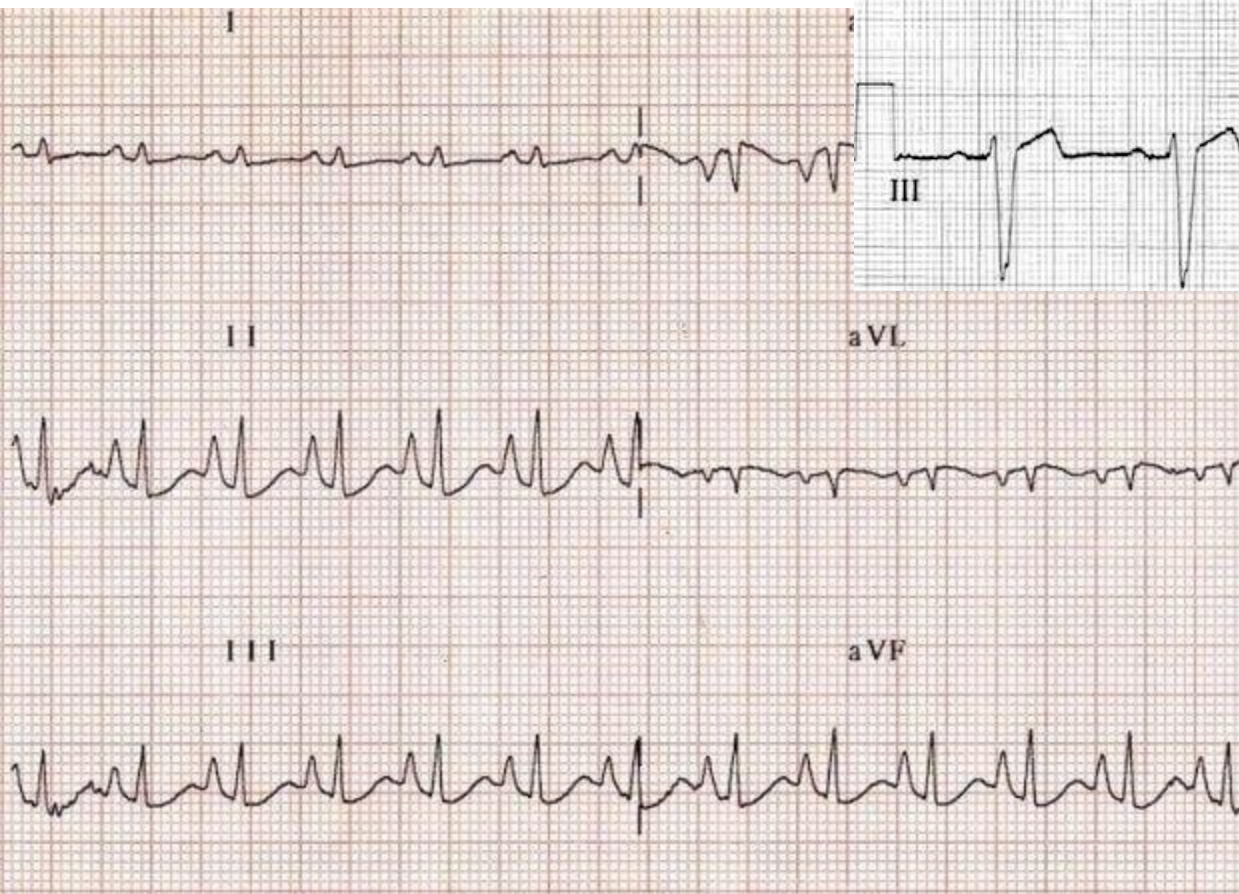
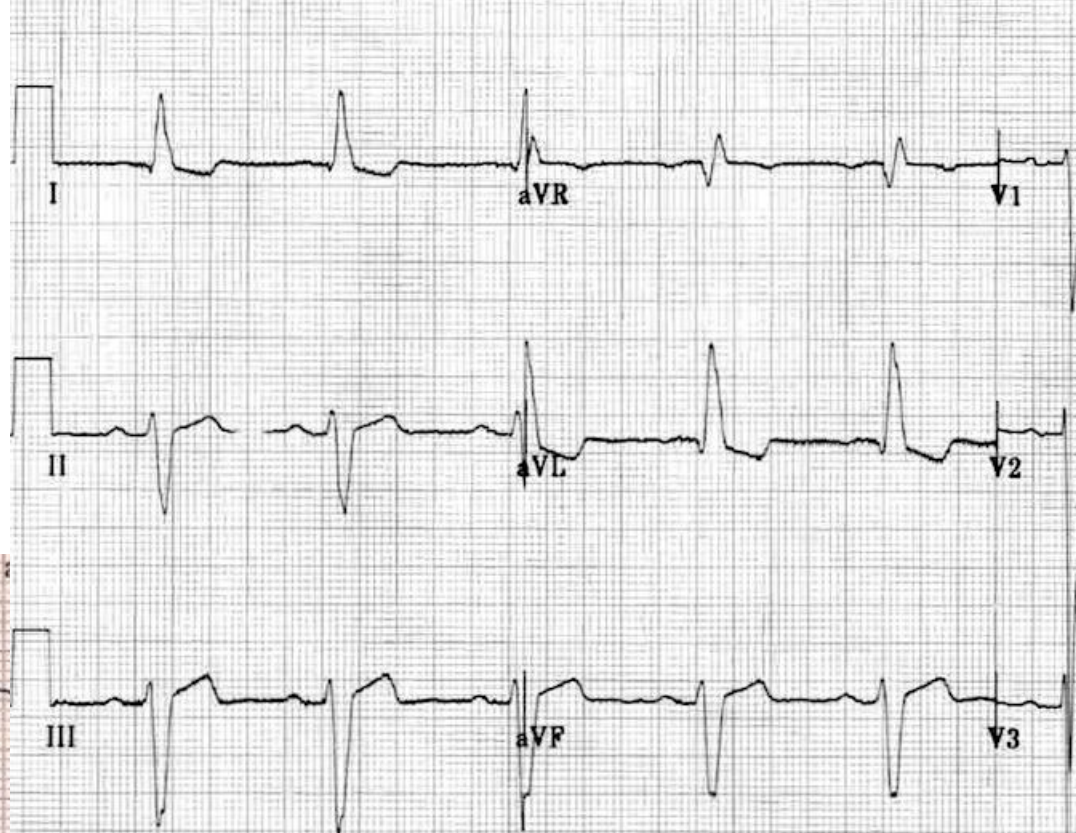


Normal Axis
(0 to +90°)





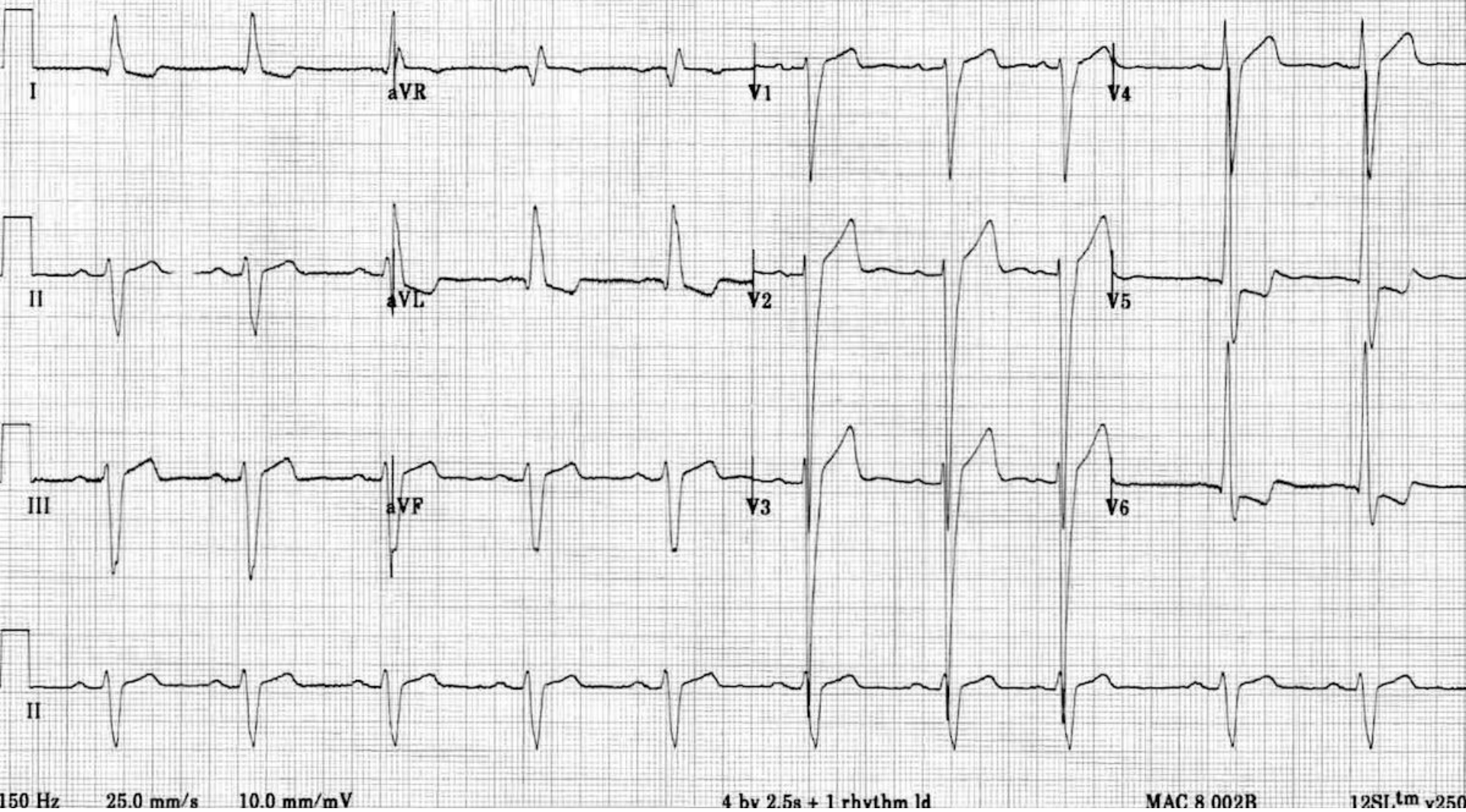




ЭКГ талдау

- 1. Синусты/емес ----- Р тісшесі;
- 2. Ырғақты/ырғақты емес ----- R – R аралықтары;
- 3. ЖСЖ ----- **25 мм/с** 300/R–R аралығындағы клетка саны

50 мм/с 300/R–R аралығындағы клетка саны;
- 4. Вольтаж;
- 5. ЖЭО.



● Талдап көрейік

-- AXIS --

P -31

QRS 52

T 243

- ABNORMAL ECG -

Order #: 36171136
Enc ID: 3014151073

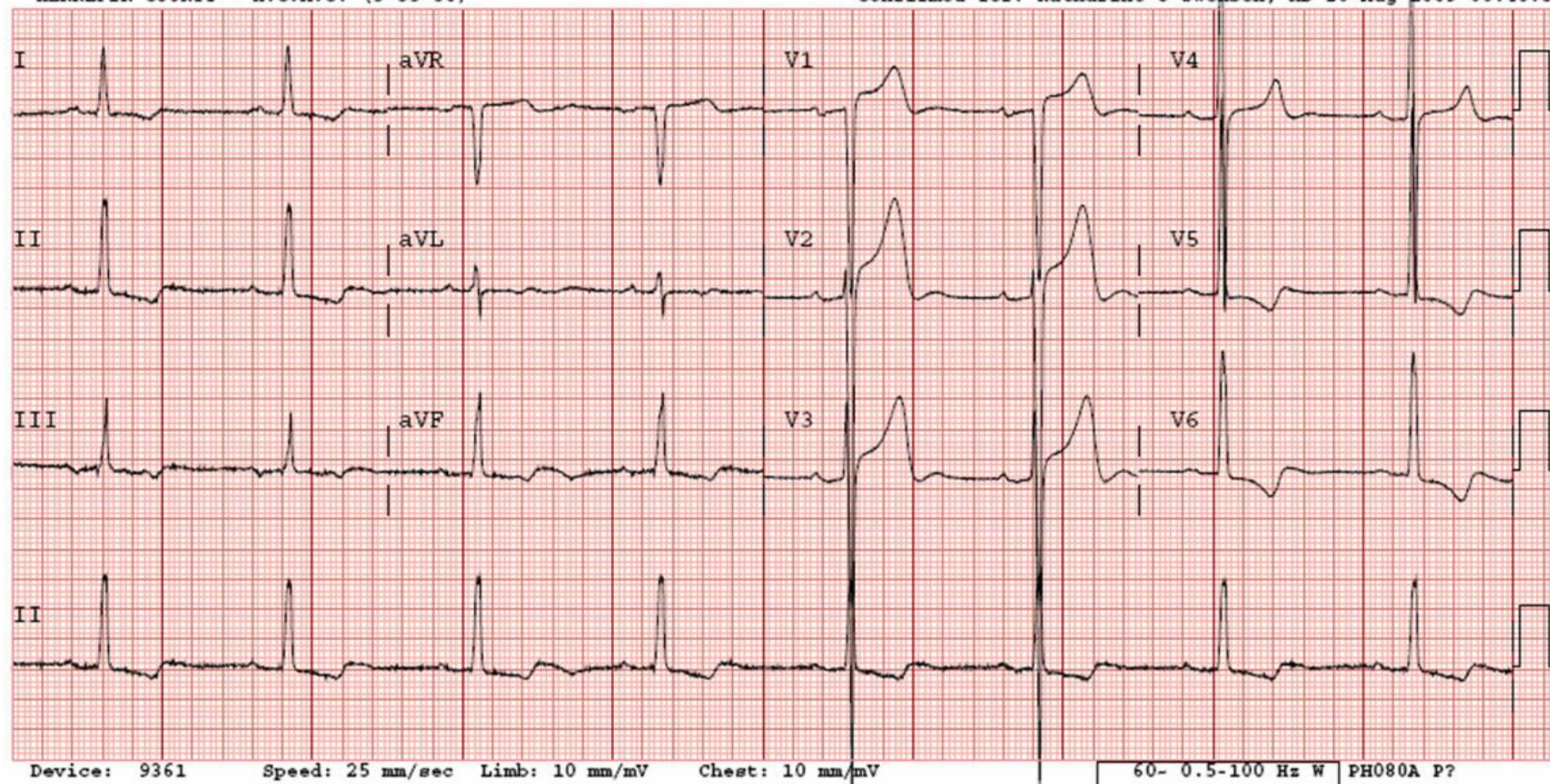
Standard 12

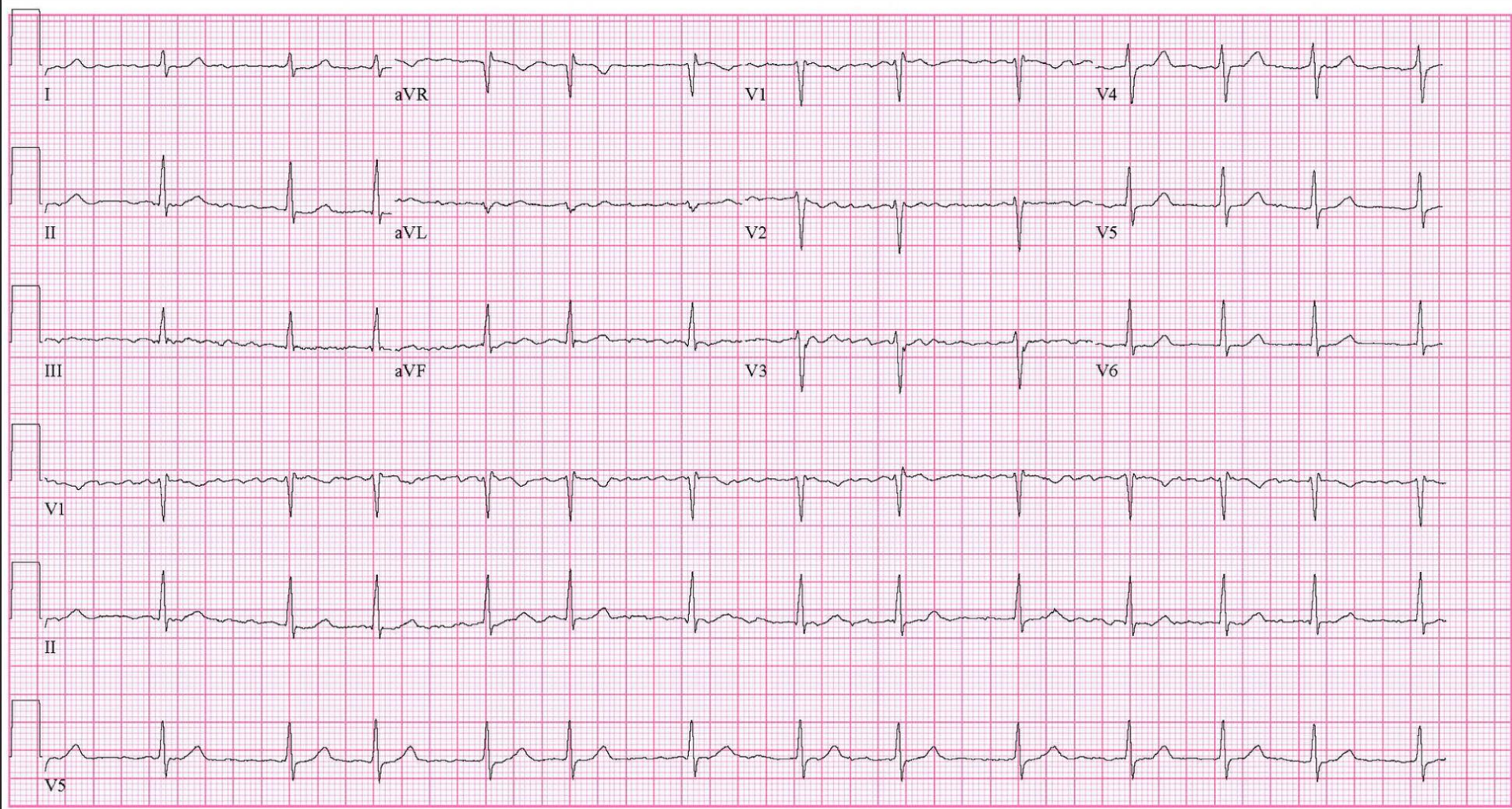
Edited

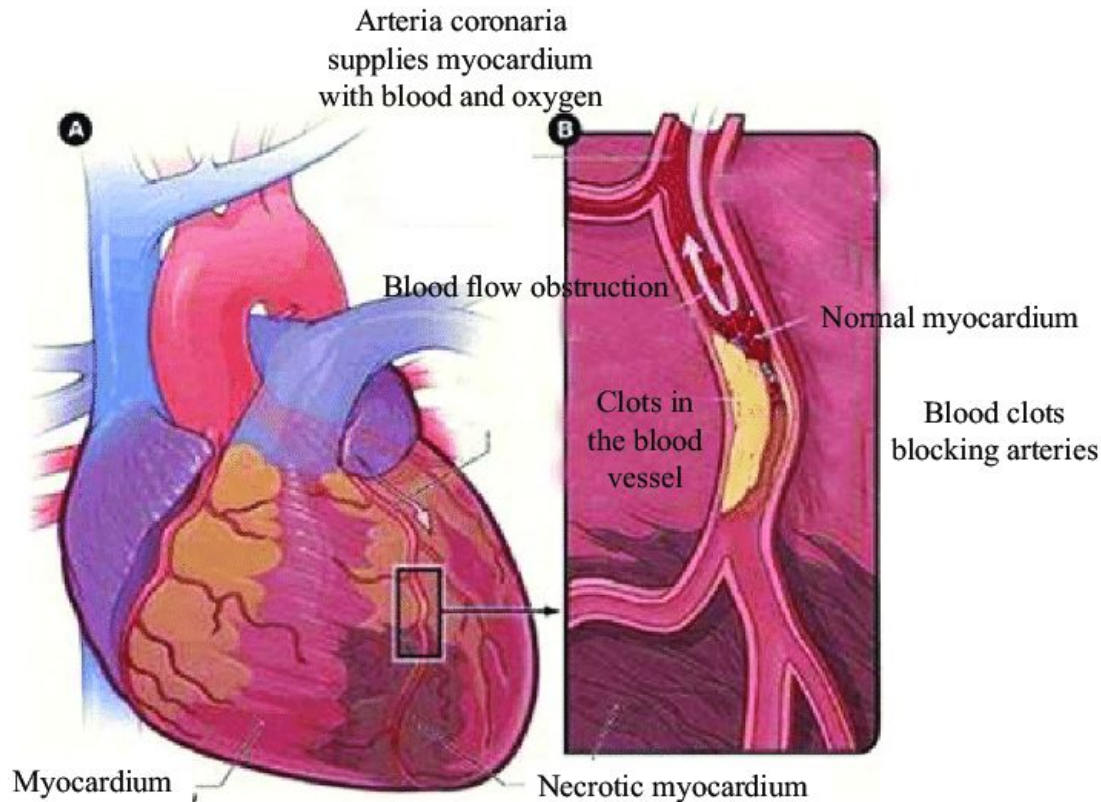
Requested By: OLSON, ANDREA

HENNEPIN COUNTY - H.C.M.C. (5-55-38)

Confirmed for: Katharine O Swenson, MD 28-Aug-2009 08:48:55





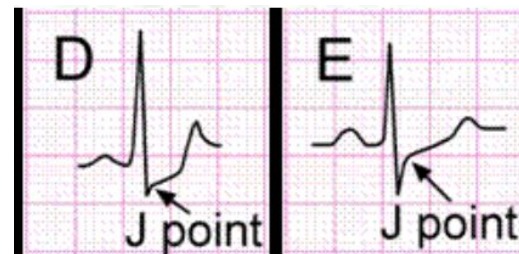
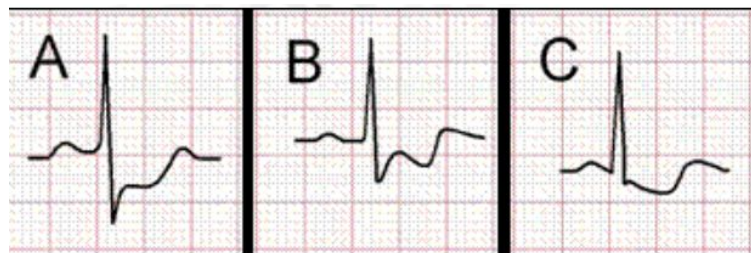


- ST сегмент;
- Q тішесі;
- Т тішесі.

ST сегменттіндегі өзгерістер

Элевациясы

Депрессиясы



Q тісшесіндегі өзгеріс

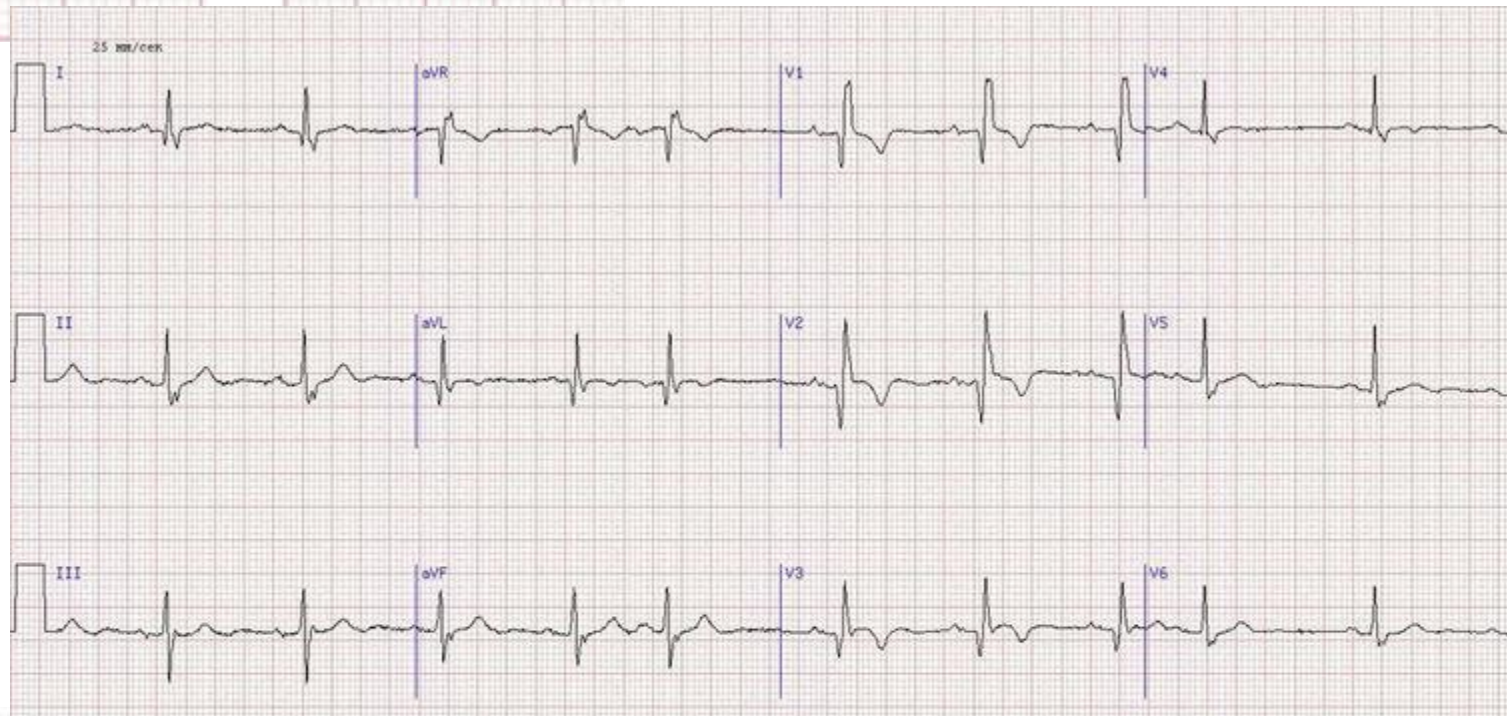
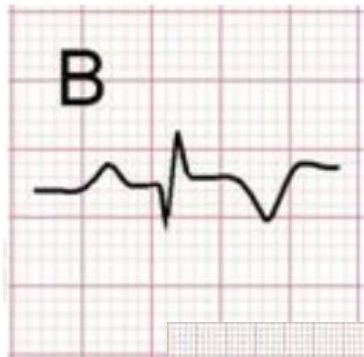
- Патологиялық Q тісшесі:

- $> 40 \text{ ms}$ (1 mm) ұзындығы

- $> 2 \text{ mm}$ тереңдігі

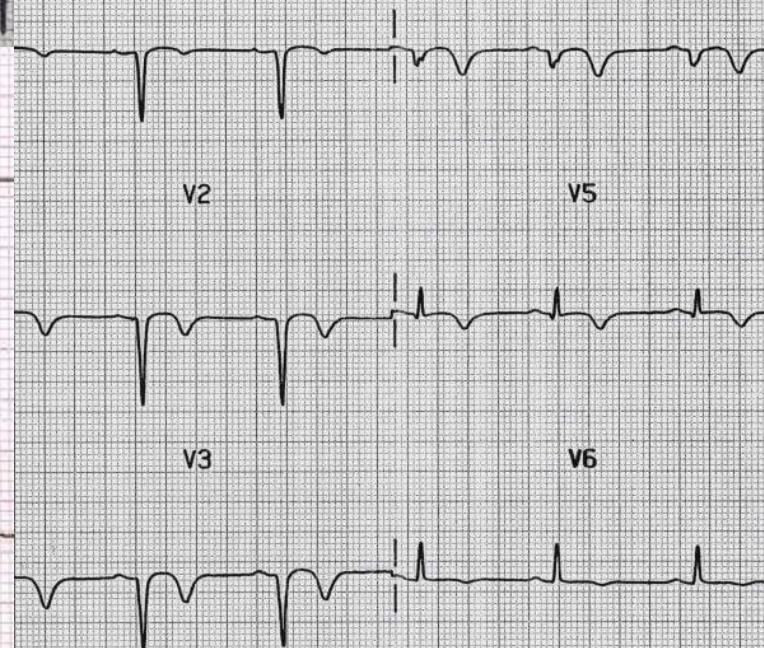
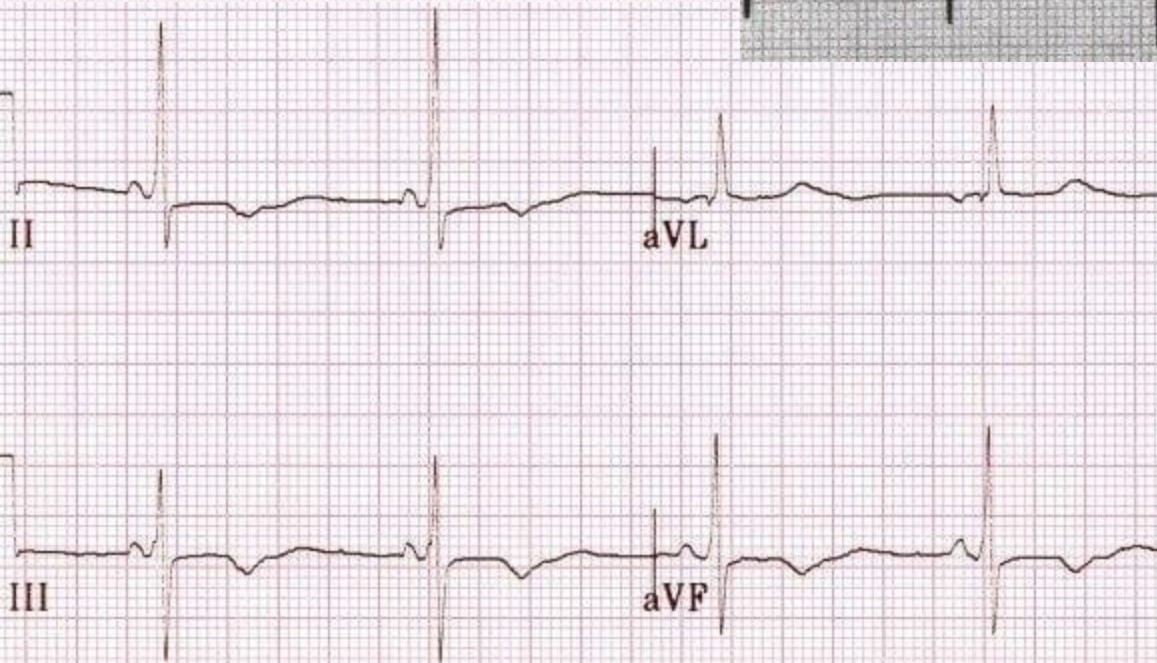
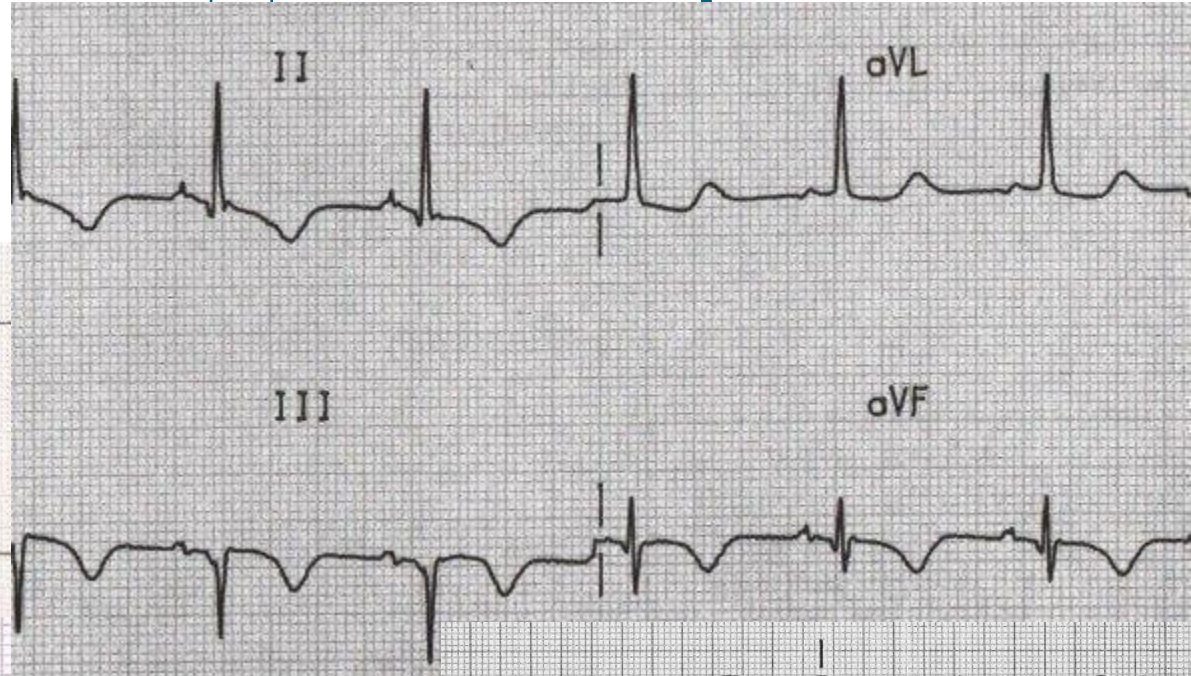
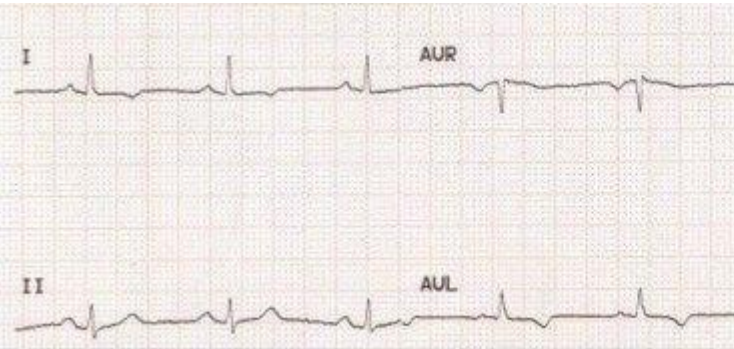
- QRS комплексінің $> 25\%$

- V1-3 тіркемелерінде көрінуі

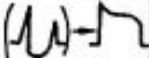
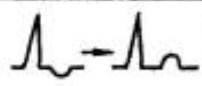


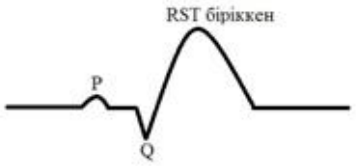
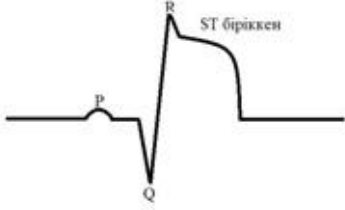
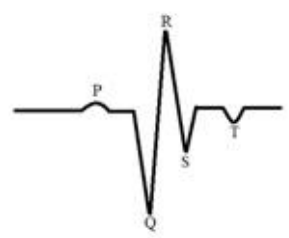
T тішесіндегі өзгеріс

T теріс



Сатылары

Условия	Острейший	Острый	Подострый (текущий, рубцующийся)	Рубцовый („старый“ ИМ, постинфарктный кардиосклероз)
Транс- муральный (крупно- очаговый) ИМ = „ИМ с зубцом Q“	 Подъем сегмента ST. Зубец T положи- тельный	 1. Патологический зубец Q (QS) 2. Уменьшение зубца R 3. Уменьшение подъема сегмен- та ST 4. Появление отрицательной фазы зубца T	 1. Патологиче- ский зубец Q (QS) 2. Сегмент ST на изолинии 3. Глубокий отрицатель- ный зубец T	 1. Патологический зубец Q (QS) 2. Возможна пози- тивизация зубца T
Субэндокар- диальный (мелкооча- говый) ИМ = „ИМ без зубца Q“	 Подъем или депрессия ST	 Отрицательная фаза зубца T Уменьшение зубца R	 Глубокий отрицатель- ный зубец T	 Возможна пози- тивизация зубца T
Начало	Минуты - часы	Часы - дни	Дни	Месяцы - годы
Длитель- ность	Часы	Дни	Дни - месяцы	Годы

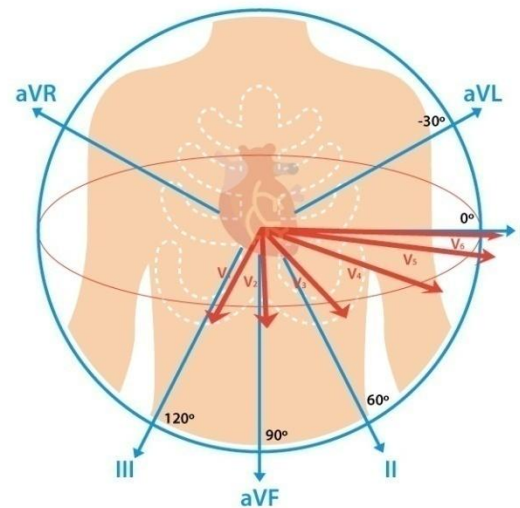
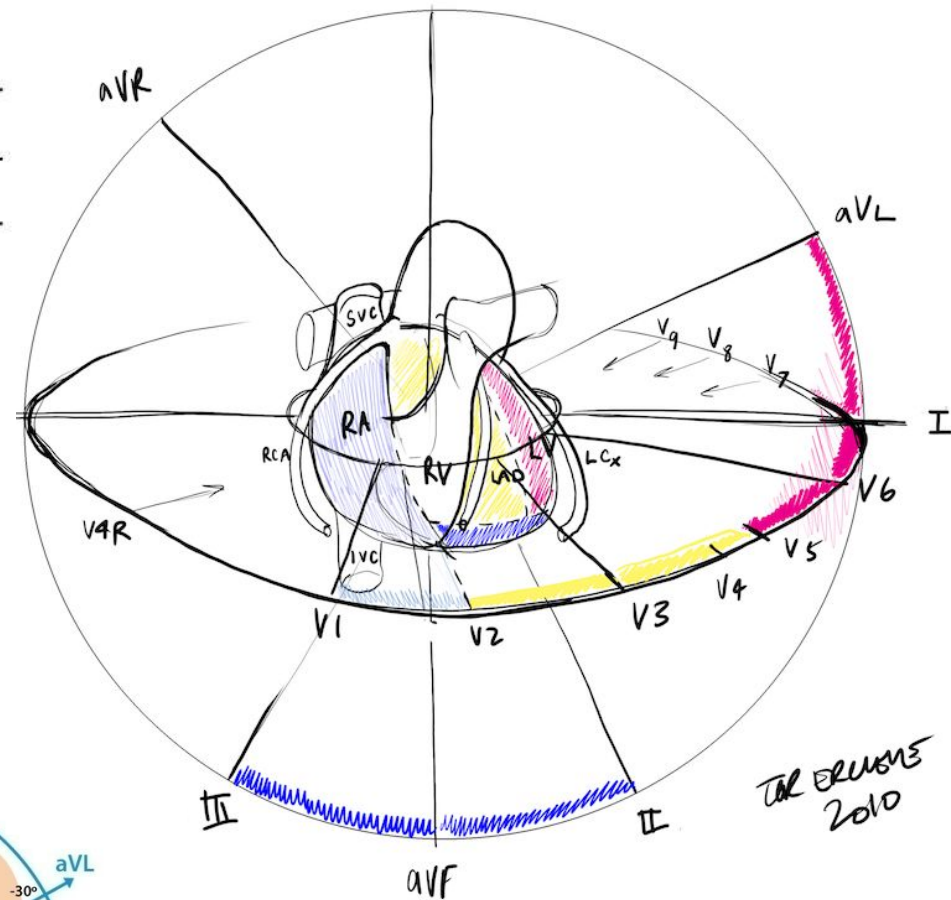
Жедел	Жеделдеу	Тыртықтану
		
Ажырату белгісі: RST тісшелерінің бірігіп кетуі. Арка секілді болуы деймін))	Ажырату белгісі: R тісшесінің пайда болуы, ST тісшелерінің әлі де бірігуі және жиі теріс T тісшесінің пайда болуы. Мысық бүкірі не арқасы деп жатады.	Ажырату белгісі: патологиялық Q тісшесінің (егер де ИМны бастан кешіргеннен біршама уақыт кеткен болса, патологиялық Q болмауы да мүмкін) және де теріс T тісшесінің пайда болуы. Теріс T тісшесі көбіне өмірінің соңына дейін сақталуы мүмкін.

Орналасуы

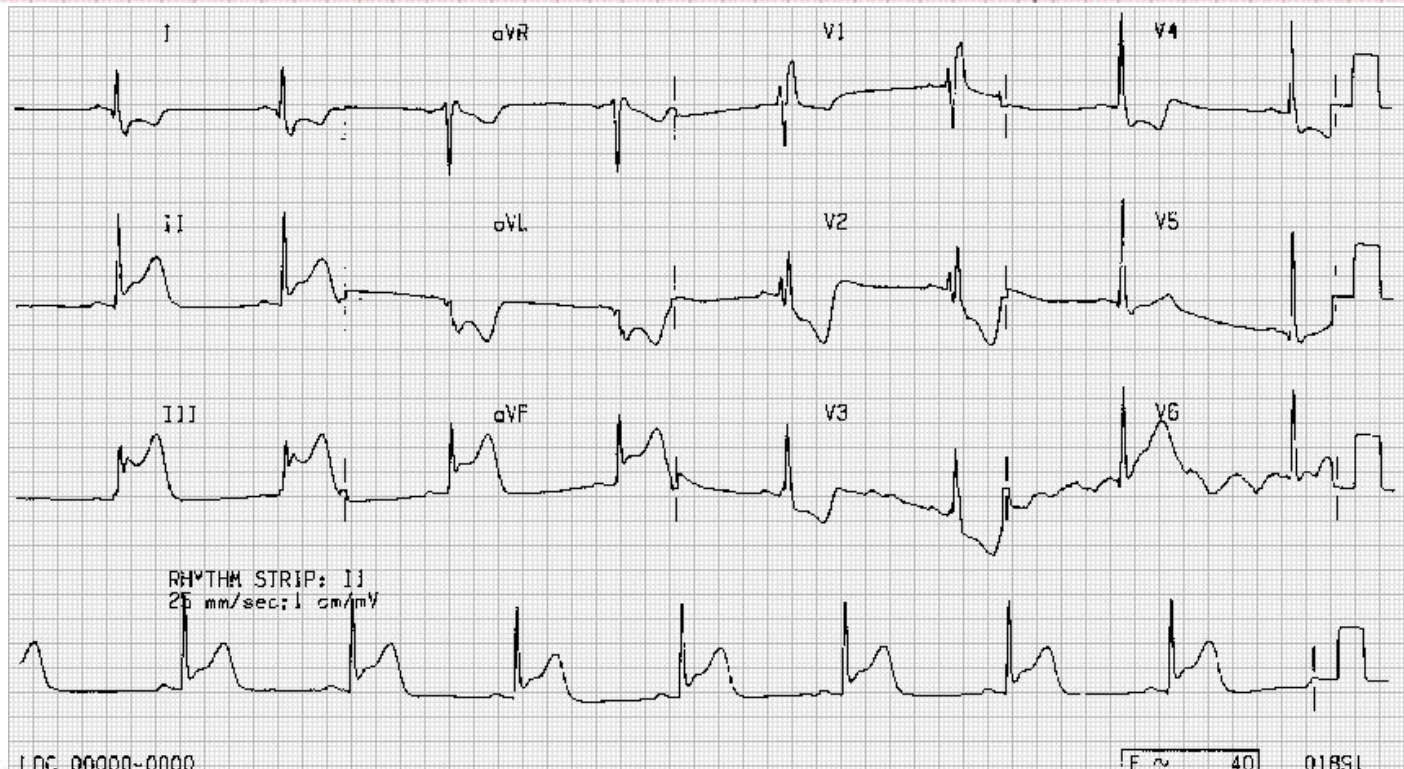
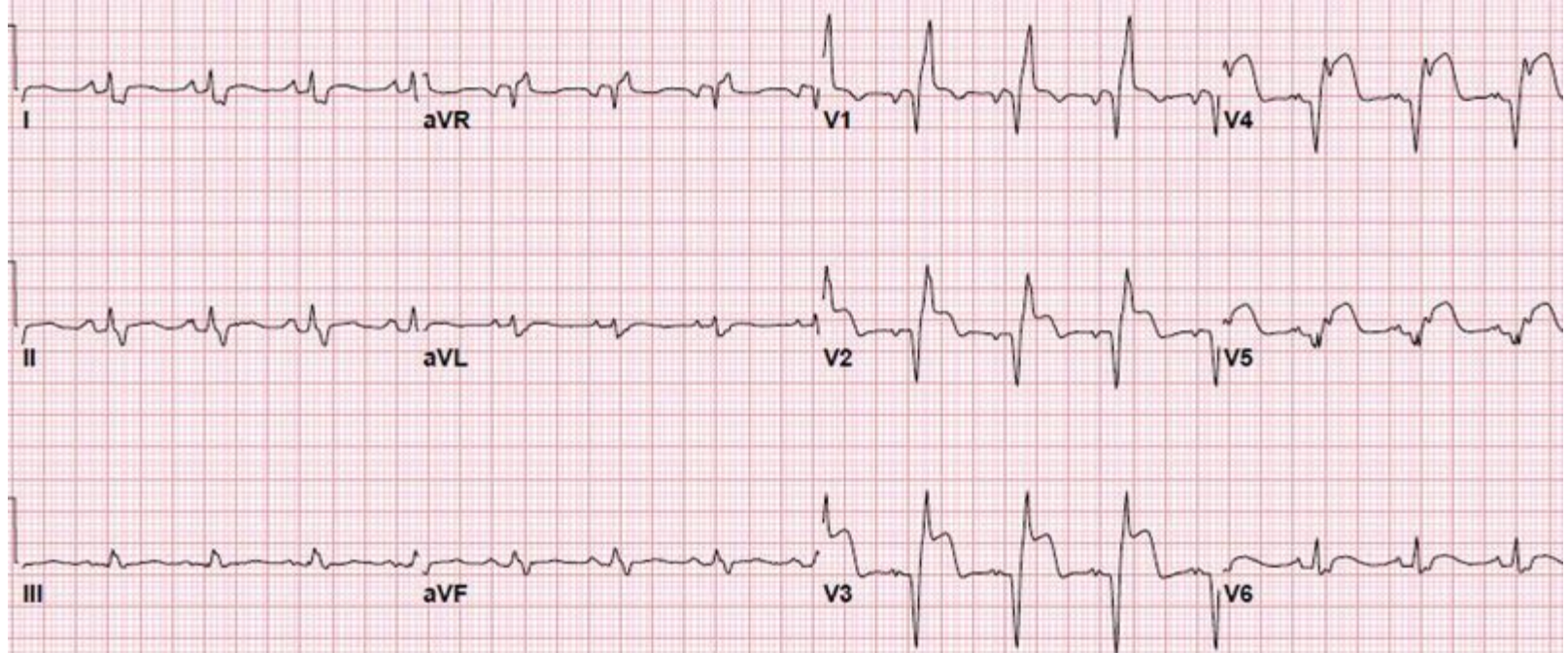
Таблица 7.1

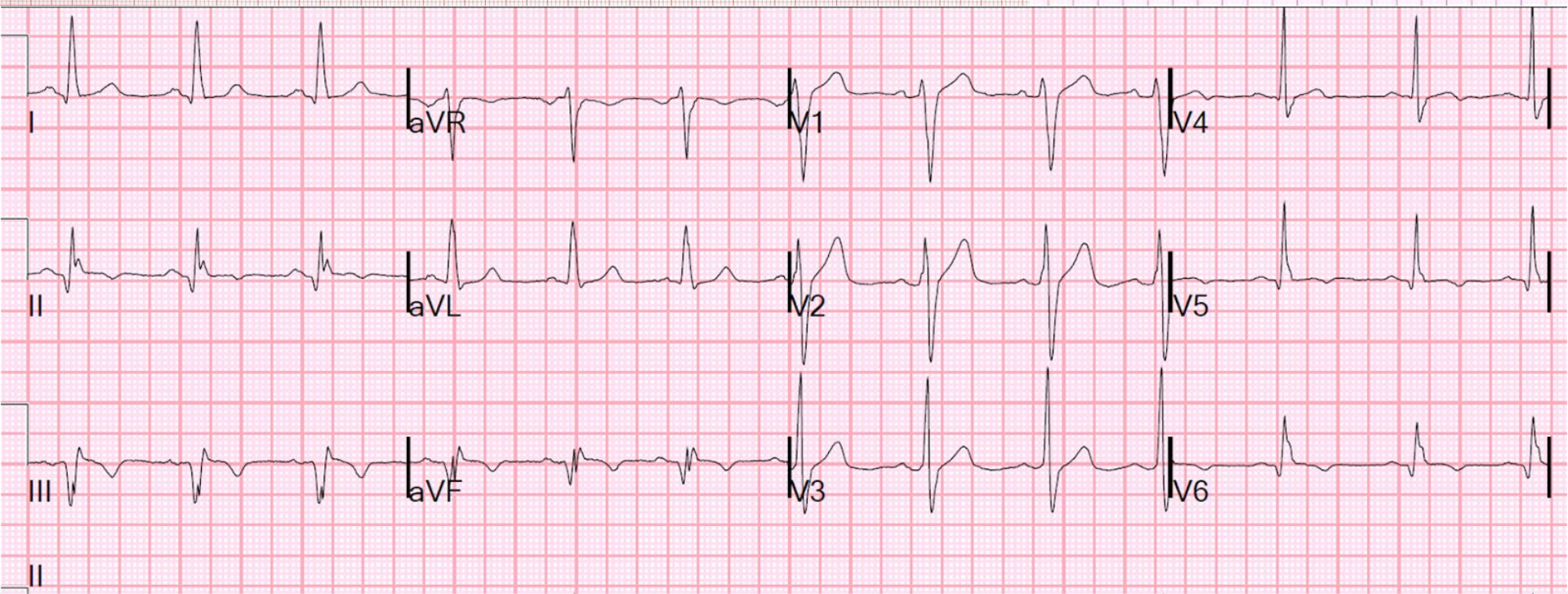
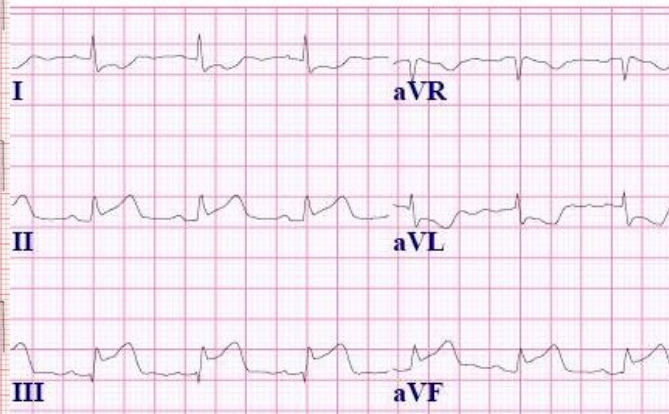
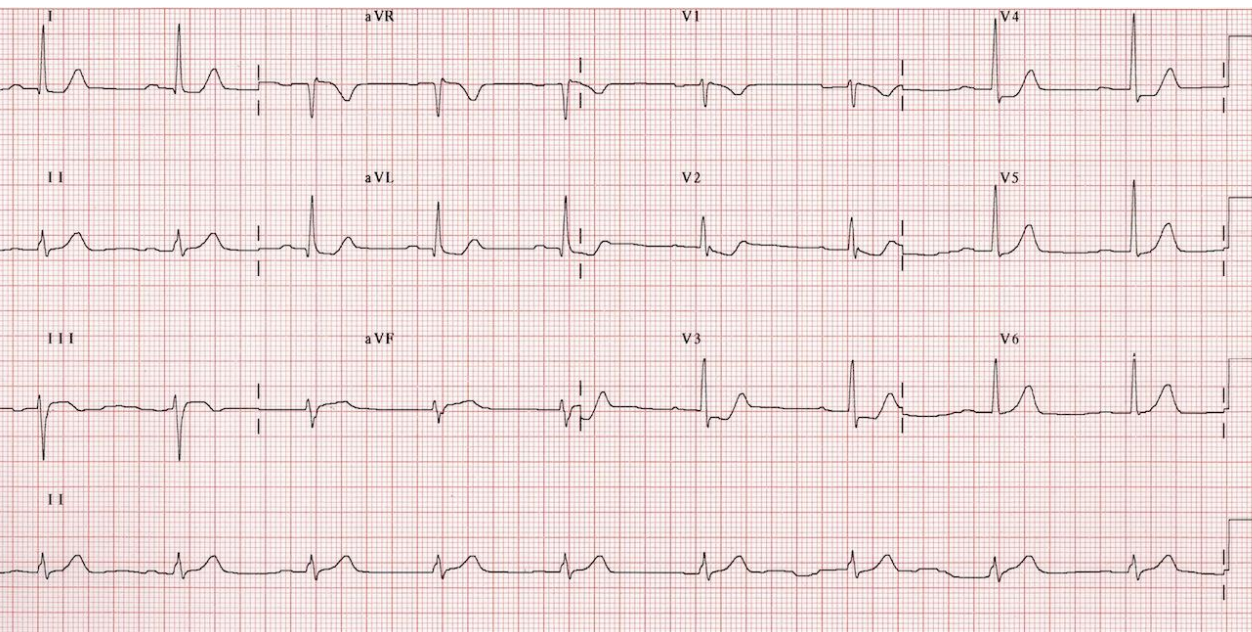
Топическая диагностика инфаркта миокарда

Локализация инфаркта миокарда	Отведения ЭКГ, в которых регистрируются	
	прямые признаки	реципрокные признаки
Передний и передне-перегородочный	V_1-V_4 , A, (I)	III, aVF, D
Переднебазальный	aVL, (I), $V_2^2-V_4^2$	III, aVF, V_1-V_2
Передний распространенный	I, II, aVL, V_1-V_6 , A, I	III, aVF, D
Боковой	I, II, aVL, V_5-V_6 , I	V_1 , (V_2 , aVR)
Боковой базальный	aVL, $V_5^2-V_6^2$	III, (V_1-V_2)
Заднедиафрагмальный (нижний)	II, III, aVF, D	I, aVL, V_2-V_5 , A
Циркулярный верхушечный	II, III, aVF, V_3-V_6 , D, A, I	aVR, V_1-V_2 , V_{3R}
Заднебазальный	V_7-V_9 , D	V_1-V_3 , V_{3R} , A
Правожелудочковый	$V_{3R}-V_{4R}$	V_7-V_9



2010





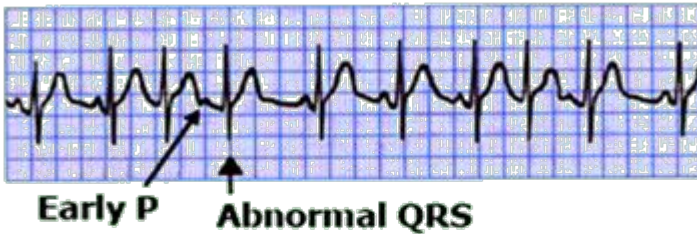
Аритмиялар

● Экстрасистолиялар

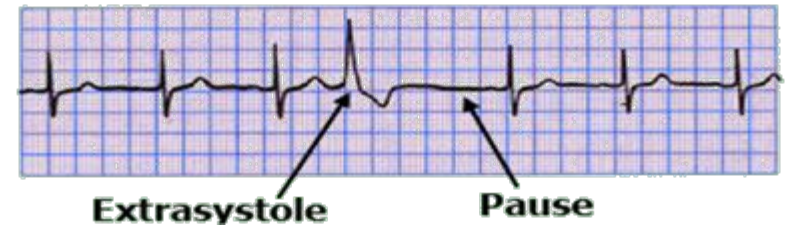
Жүрекшелік

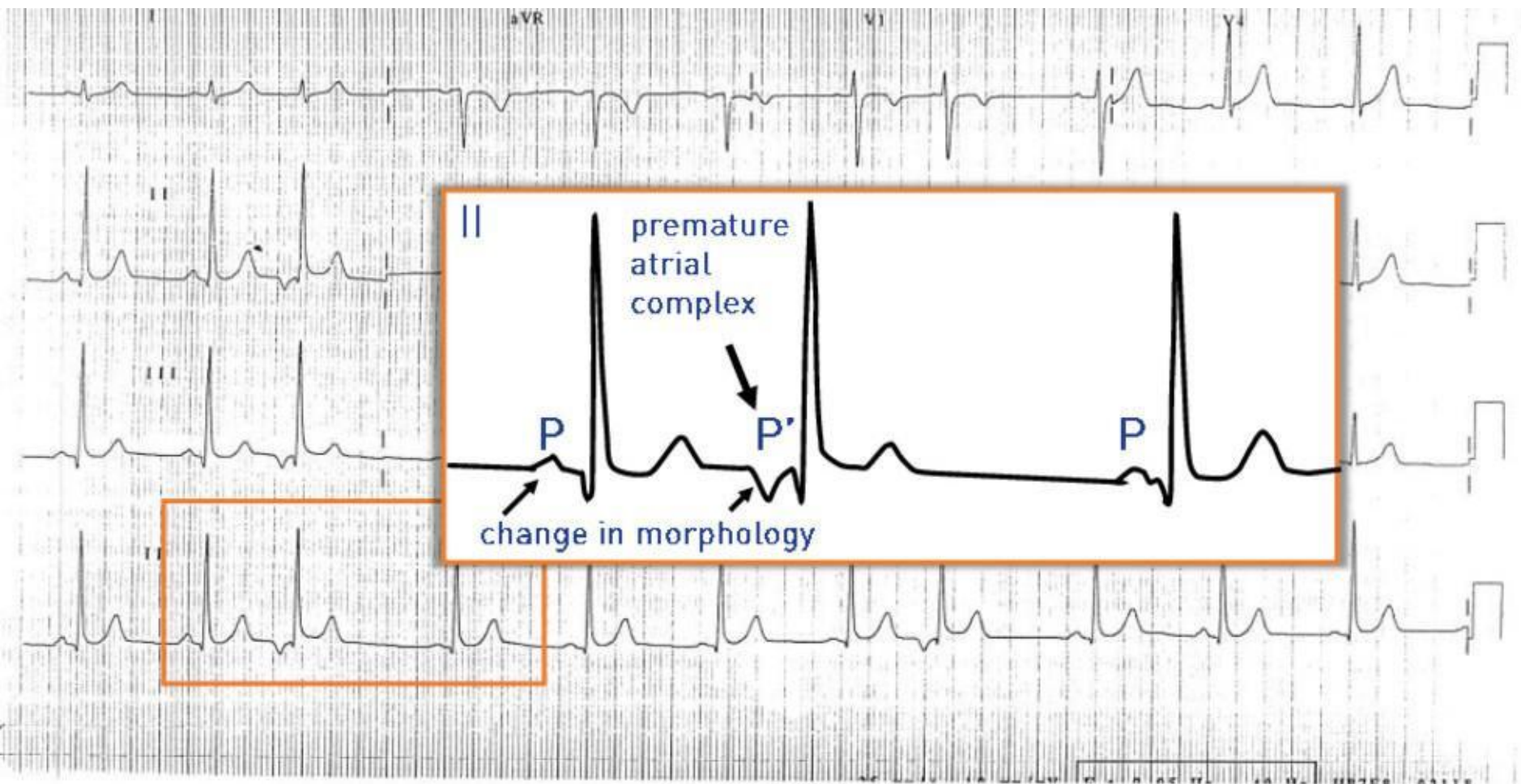
Қарыншалық

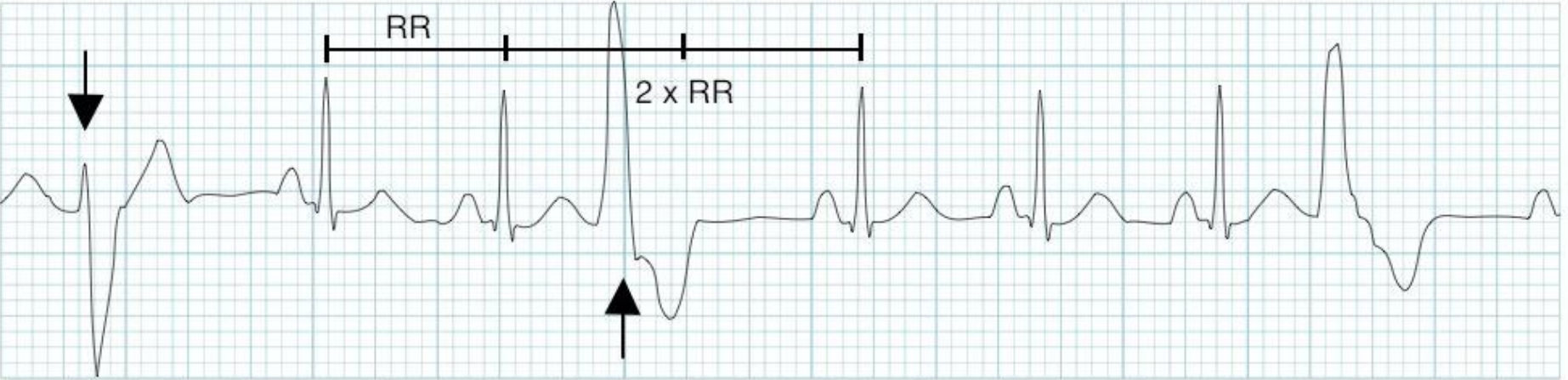
Atrial Extrasystole

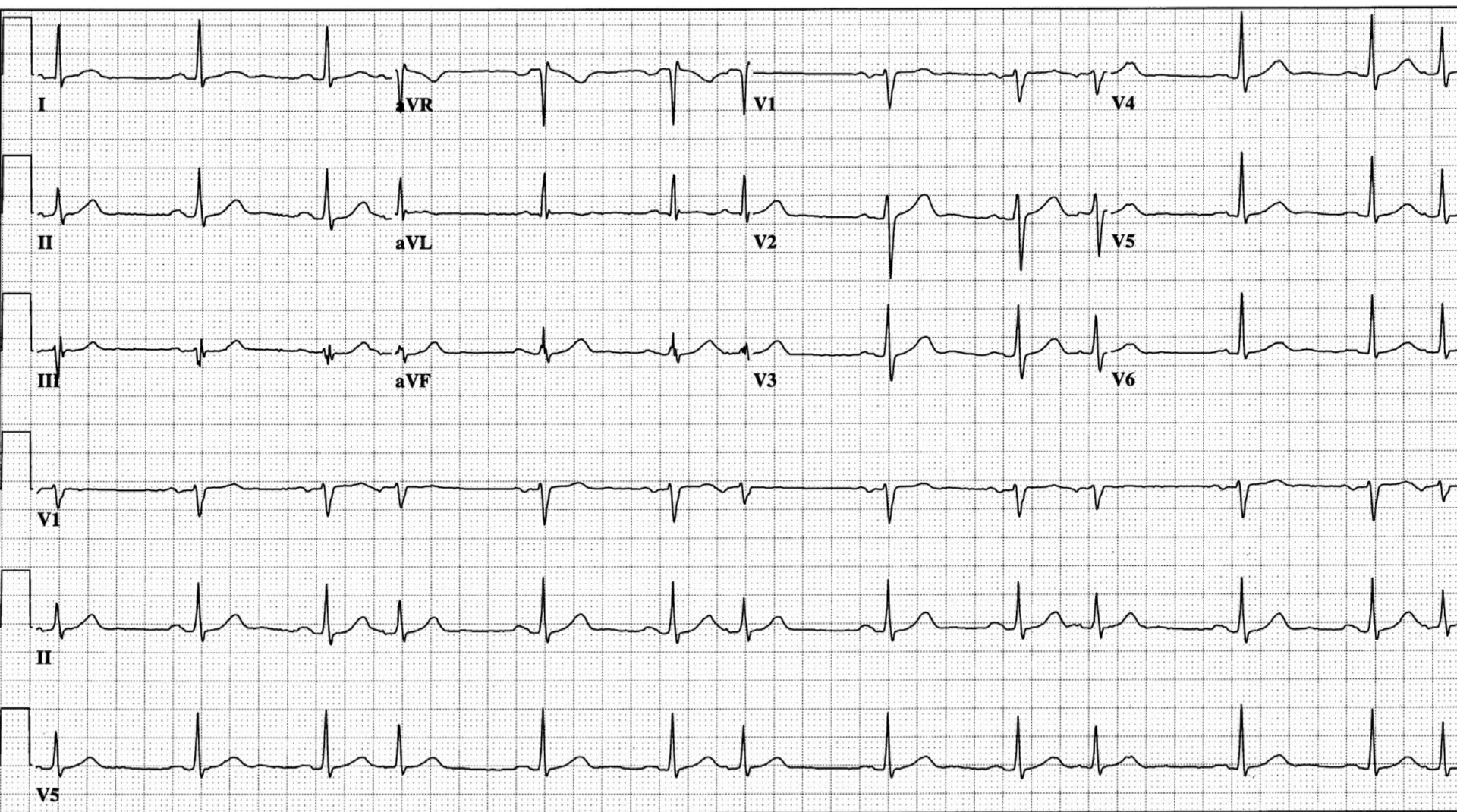


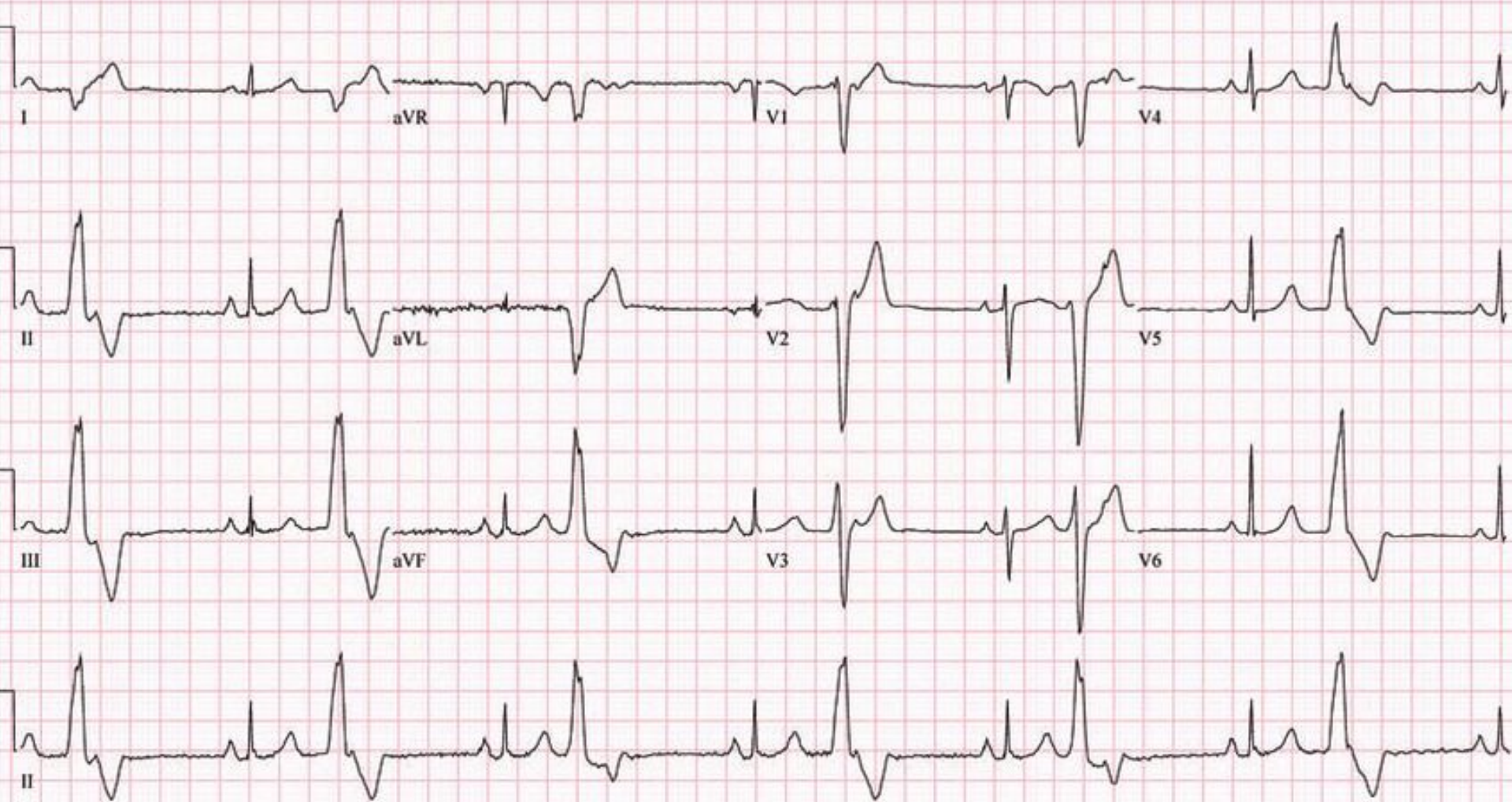
Ventricular Extrasystole

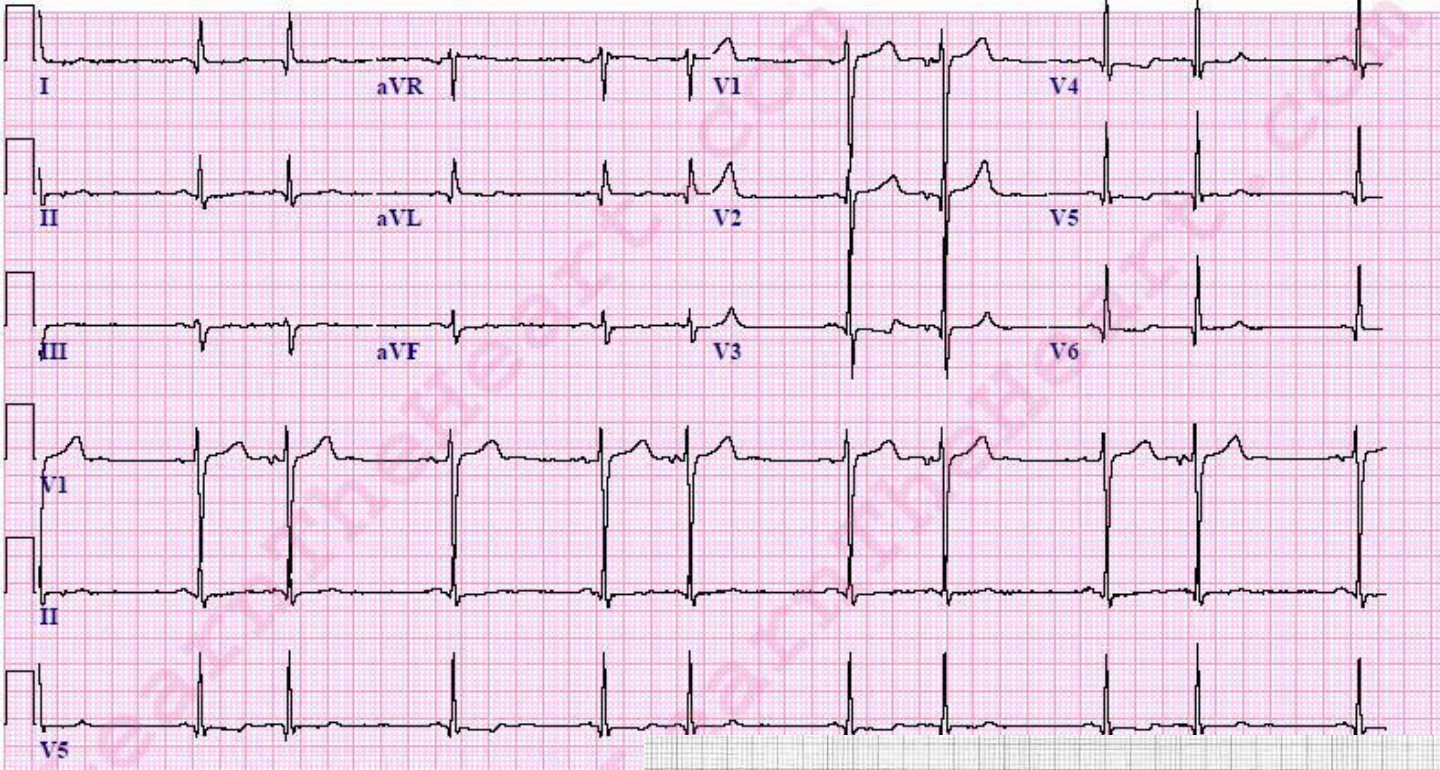




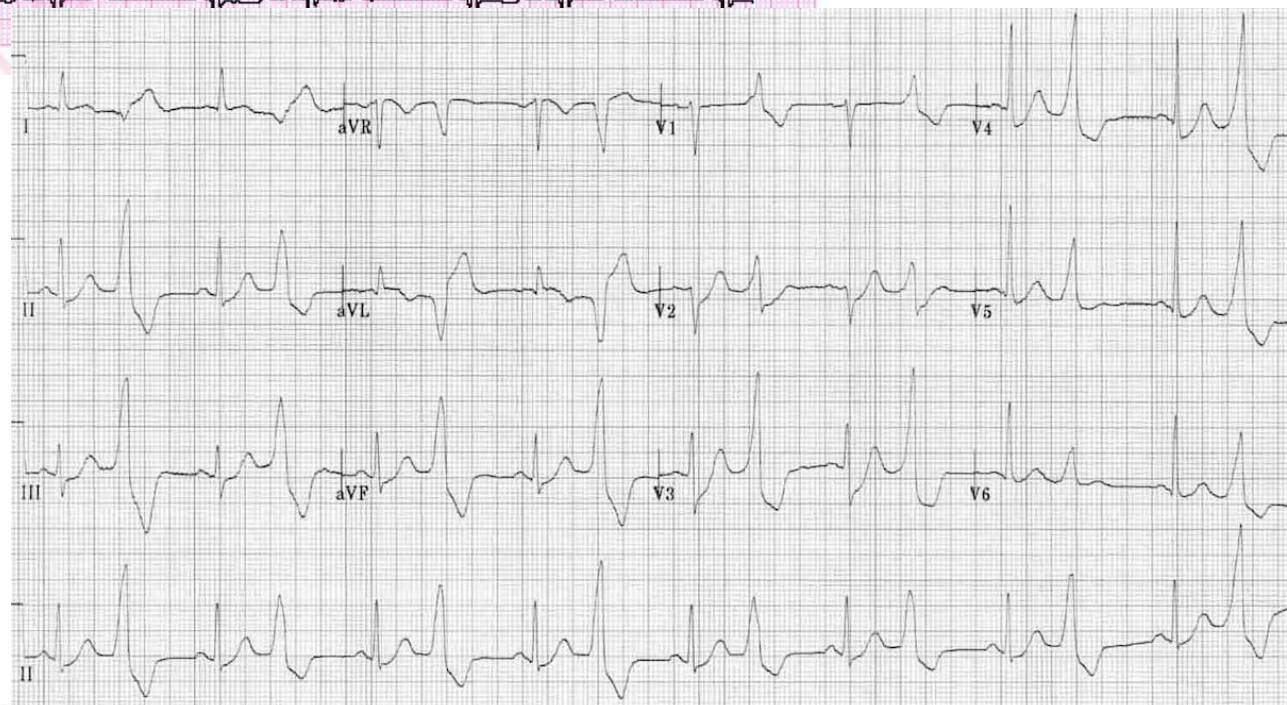








25mm/s 10mm/mV 100Hz 005C 12SL 250 CID: 0



Пароксизмальды жүрекшелік тахикардия

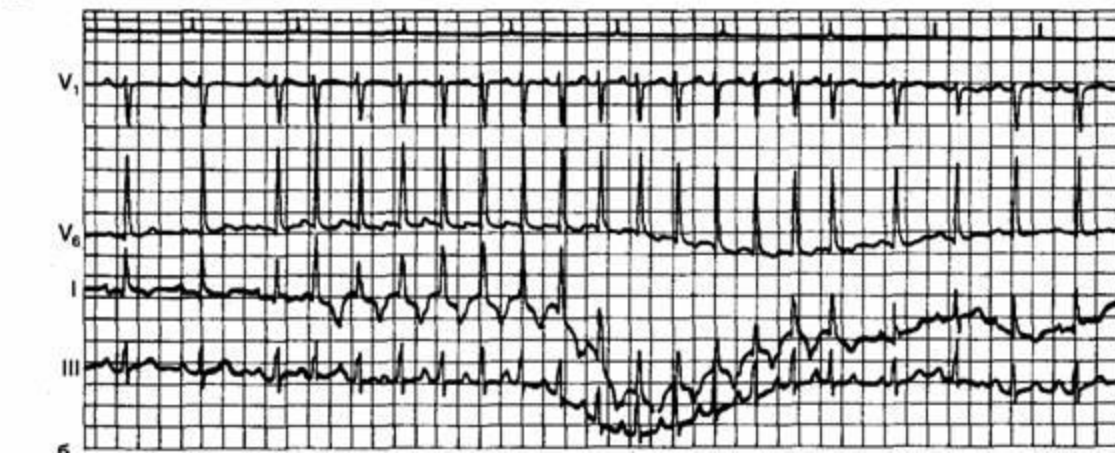
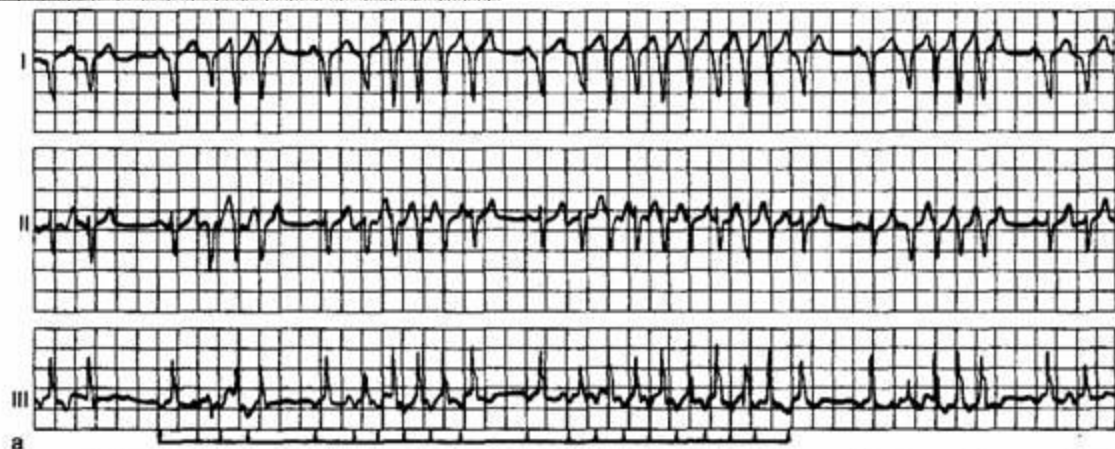
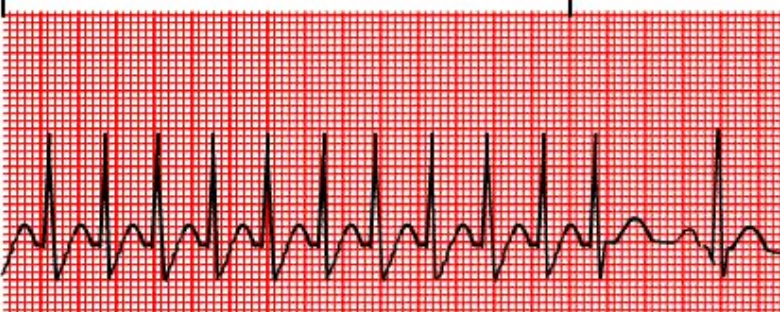
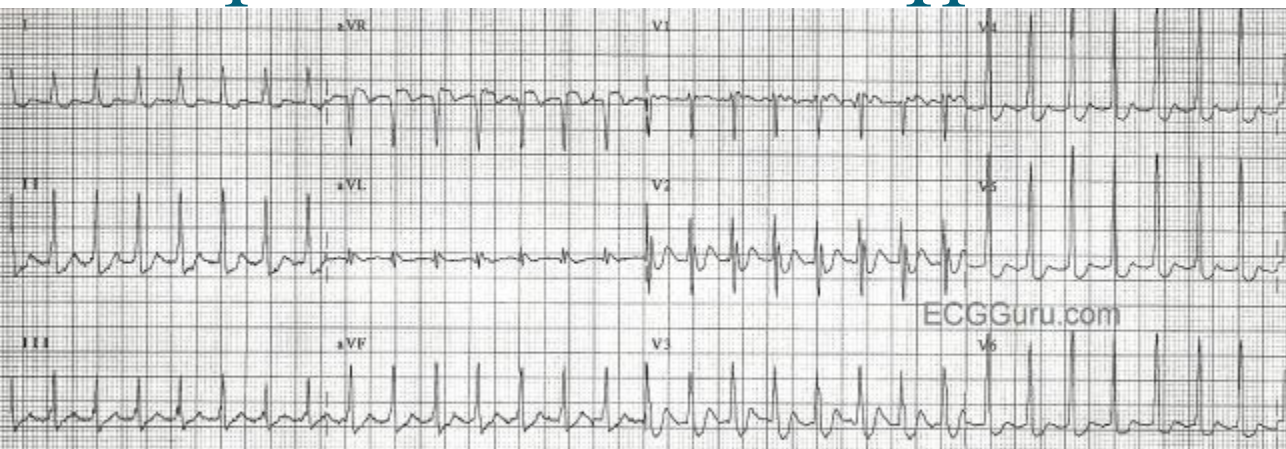
Шарттары:

Синусты ритм;

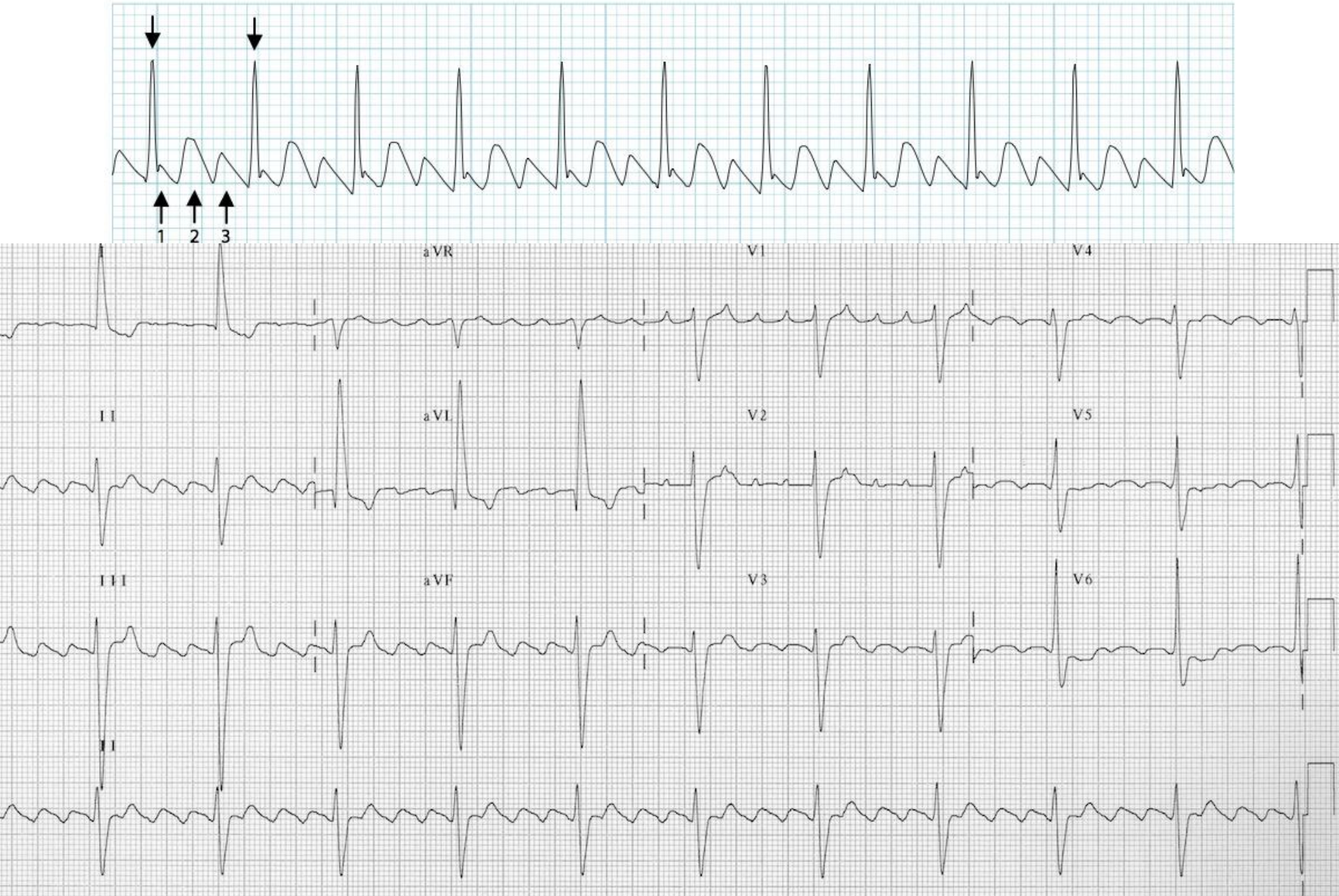
Р мен Т біріккен;

Здан соң QRS болуы;

ЖСЖ 100 р/мин жоғары
220 р\мин дейін.



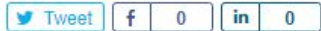
Жүрекшелер дірілі



Жүрекшелер дірілі

Atrial Flutter

by Dr Ed Burns, last update November 25, 2018



Atrial Flutter Overview

Atrial flutter is a type of **supraventricular tachycardia** caused by a re-entry circuit within the right atrium. The length of the re-entry circuit corresponds to the size of the right atrium, resulting in a fairly predictable **atrial rate of around 300 bpm (range 200-400)**.

- Ventricular rate is determined by the AV conduction ratio ("degree of AV block"). The commonest AV ratio is 2:1, resulting in a ventricular rate of ~150 bpm.
- Higher-degree AV blocks can occur — usually due to medications or underlying heart disease — resulting in lower rates of ventricular conduction, e.g. 3:1 or 4:1 block.
- Atrial flutter with 1:1 conduction can occur due to sympathetic stimulation or in the presence of an accessory pathway — especially if AV-nodal blocking agents are administered to a patient with WPW.
- Atrial flutter with 1:1 conduction is associated with severe haemodynamic instability and progression to **ventricular fibrillation**.



RECENT POSTS



Funtabulously Frivolous
Friday Five 269

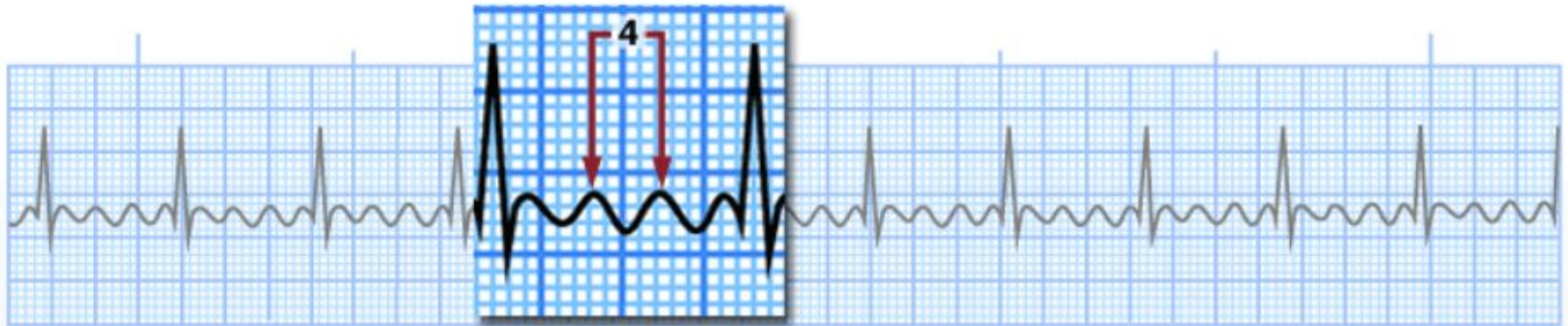


Benjamin Sacks



Determine rhythm regularity (R-R, P-P)

Calculate the heart rate



In this rhythm, the atrial rate differs from the ventricular rate.

Atrial Rate

Method 1: Divide 1500 by 4: 375 bpm.

Method 2: Use a [heart rate table](#) to find the rate that matches 4 boxes (the interval between flutter waves): 375 bpm.

Method 3: Since flutter waves are occurring every 4 small boxes, the result is greater than 300 bpm.

Method 4: Count the number of Flutter waves in 6 seconds and multiply by 10 ($37 \times 10 = 370$). Result is ≈ 370 bpm. Note: Calculation of the atrial rate does not assist in rhythm interpretation.

[Reset](#)

Examine the P waves

Measure the PR interval

Measure the QRS complex

Measure the QT interval

Examine the ST segment

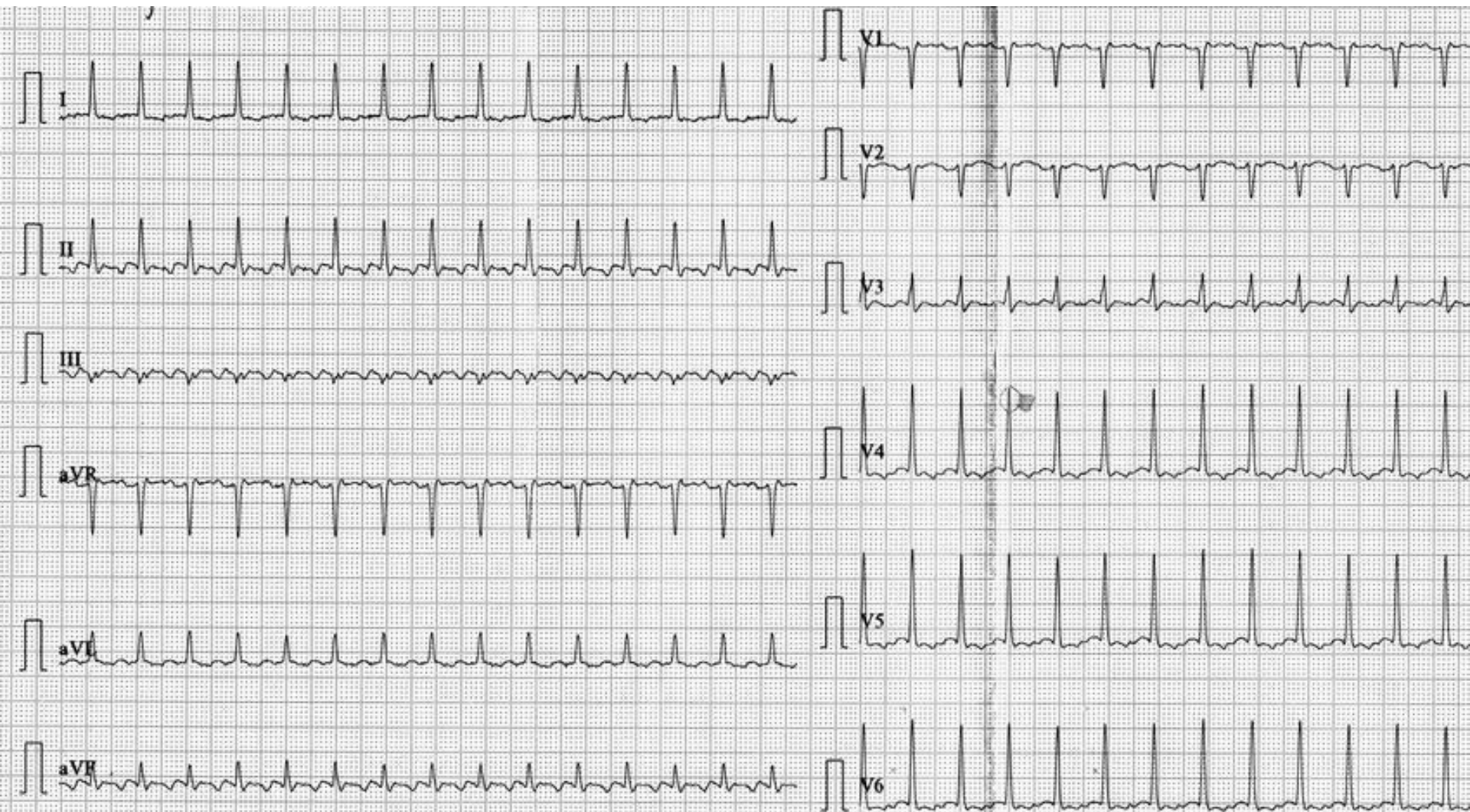
● Шарттары:

Ырғақты;

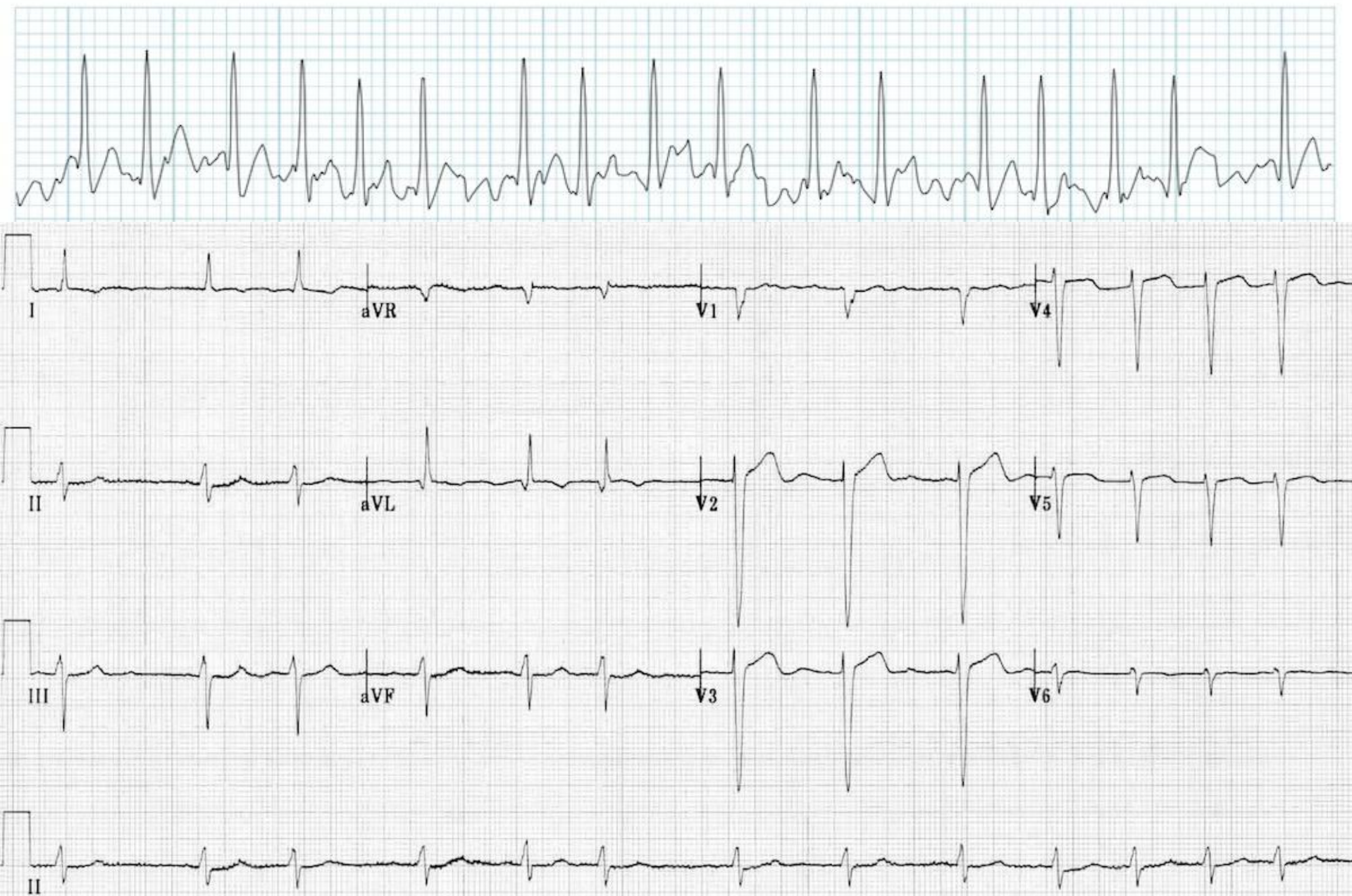
Амплитудалар бірдей;

ЖҮРЕКШЕЛЕРДІҢ жиырылу жиілігі: 300 р/мин;

Ірі F толқындары: II, III, aVF

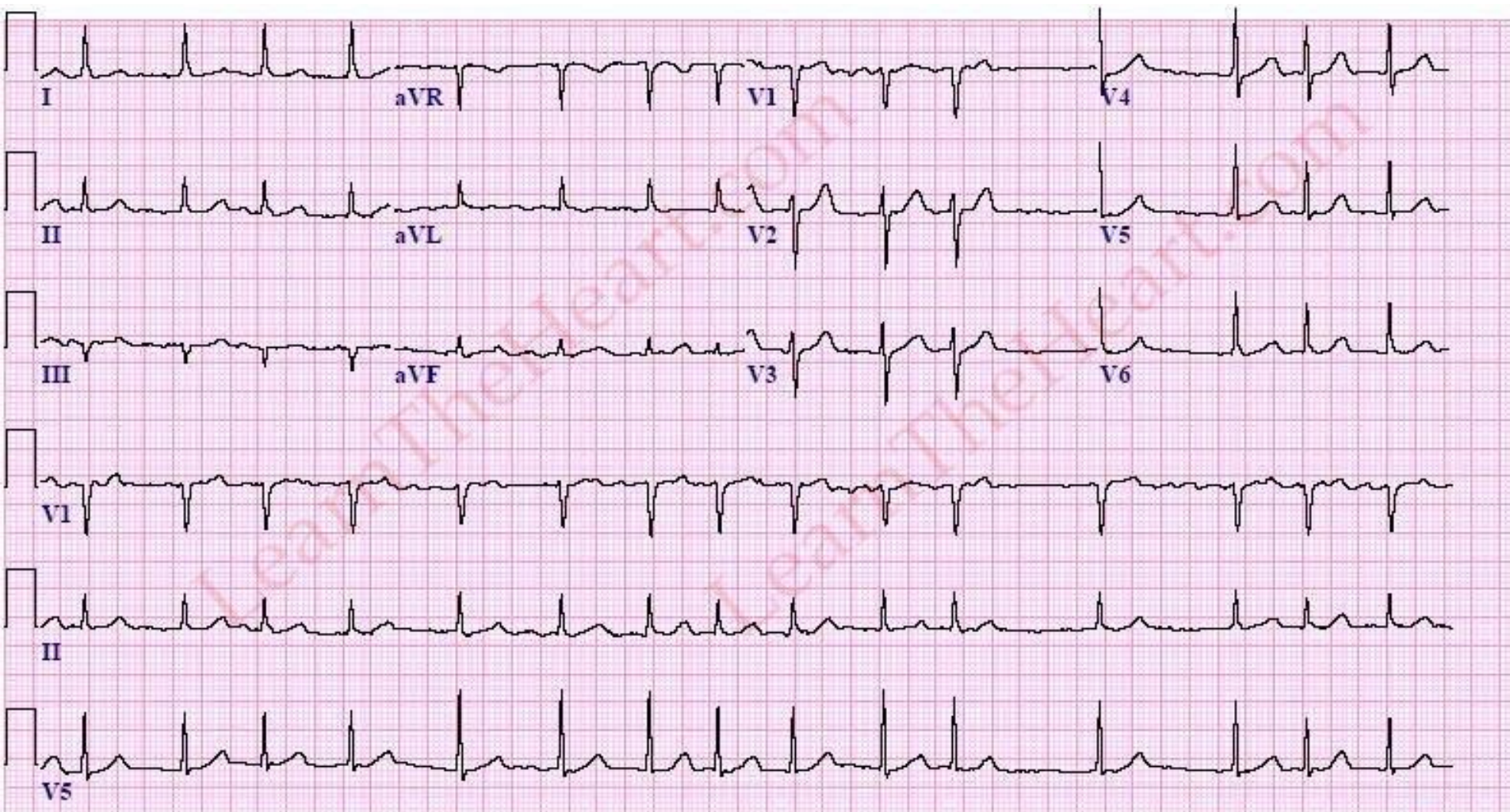


Жүрекшелер жыбыры

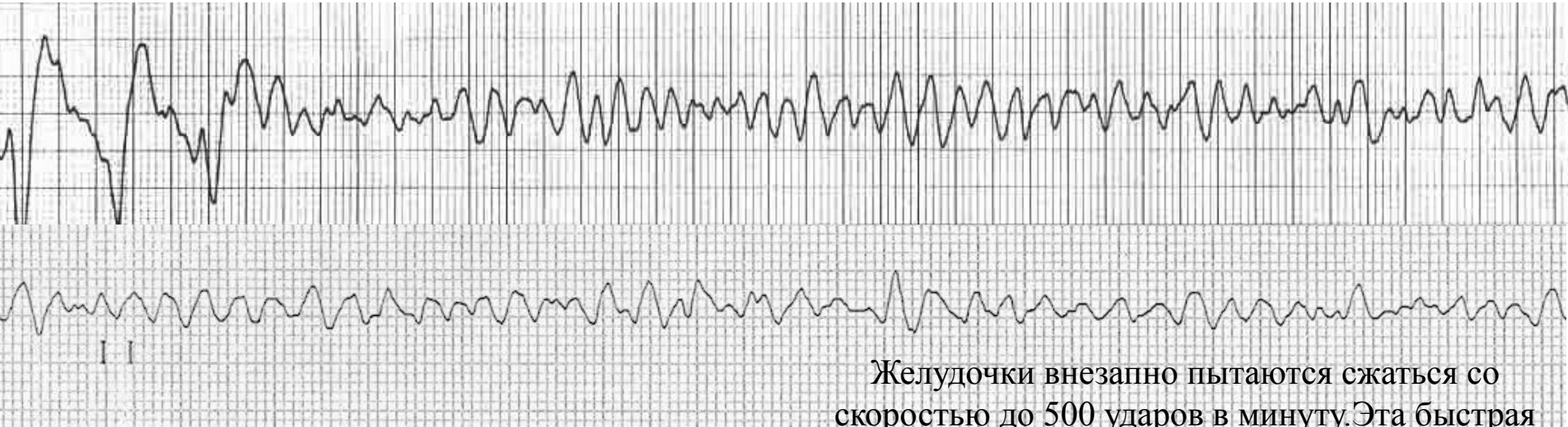


● Шарттары:

- Синуссыз ритм;
- Ырғақсыз;
- Майда f толқындары;
- Амплитудалар әртүрлі;
- ЖСЖ 110-140 р/мин, сирек >160-170 р/мин)



Қарыншалар жыбыры

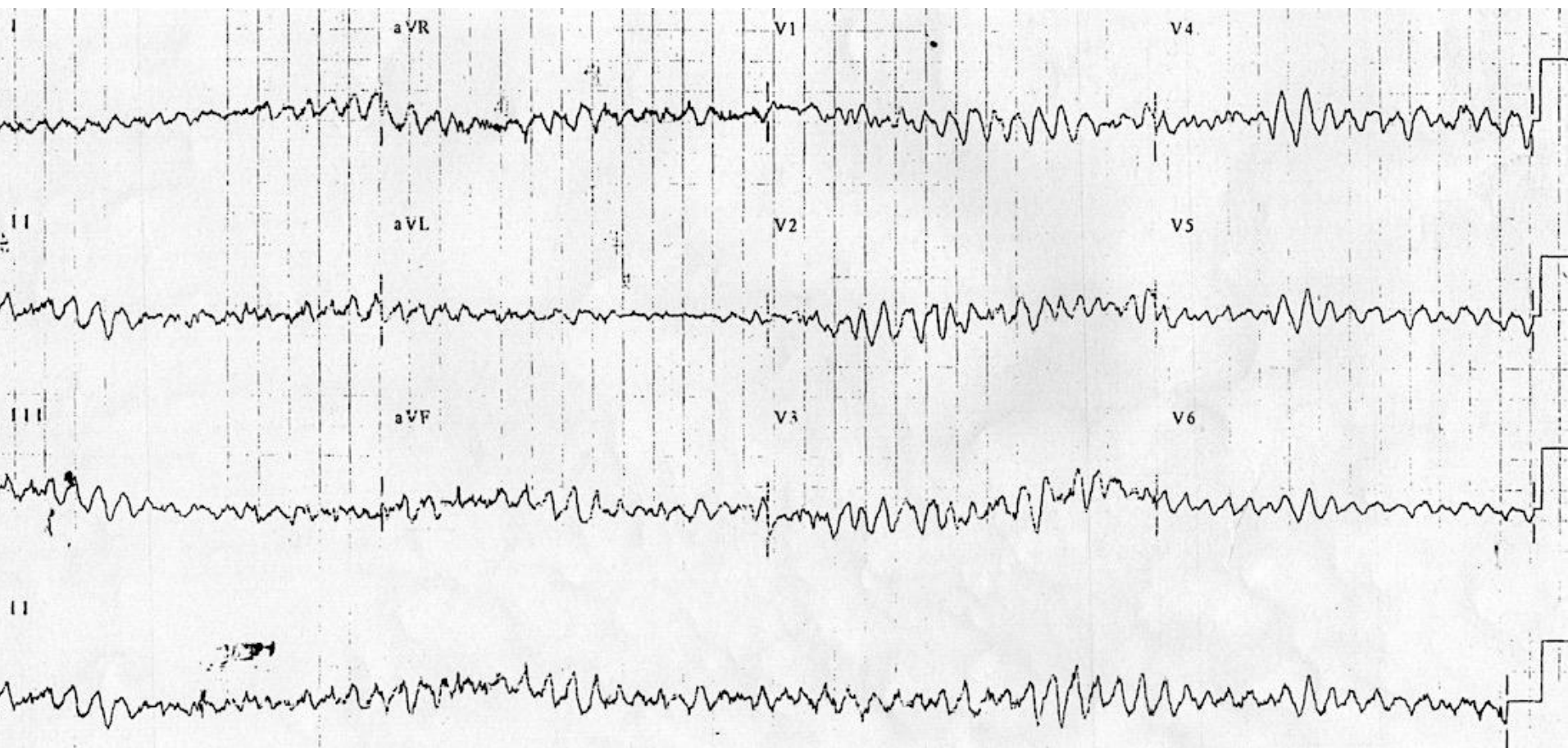


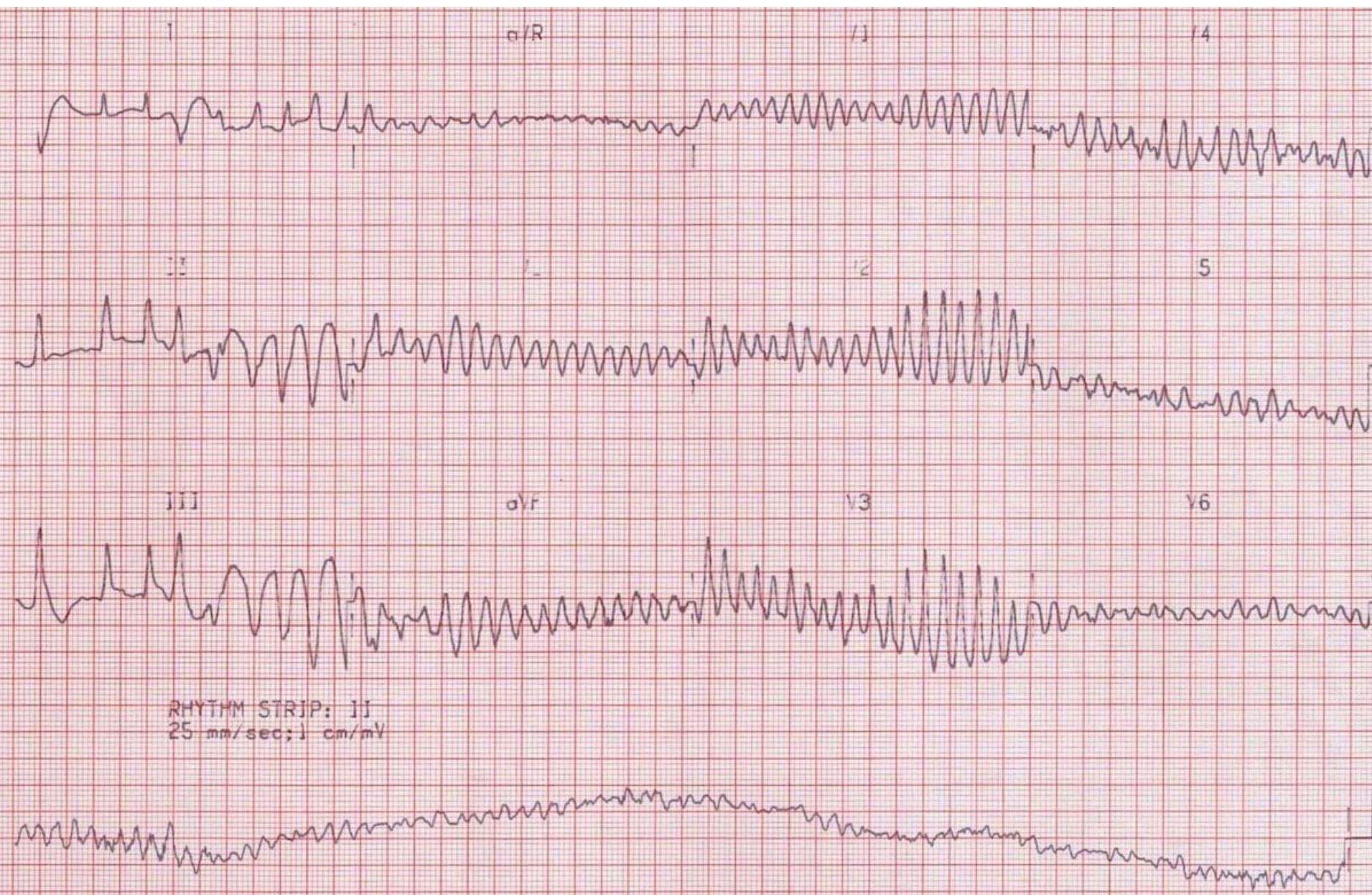
Желудочки внезапно пытаются сжаться со скоростью до 500 ударов в минуту. Эта быстрая и скачками электрическая деятельность представляет желудочки неспособным заключить контракт в синхронизированном образе, приводя к немедленной потере сердечного выхода. Сердце больше не является эффективным насосом и сводится к дрожащему беспорядку. До тех пор, пока не будет быстро налажено современное жизнеобеспечение, этот ритм неизменно фатален. Увеличиваемая вентрикулярная фибрилляция приводит к уменьшению амплитуды формы волны, от начального грубого ВФ к точному ВФ и в конечном счете вырождается в асистию, которую следует считать прогрессирующим расходом миокардиальных энергетических запасов.

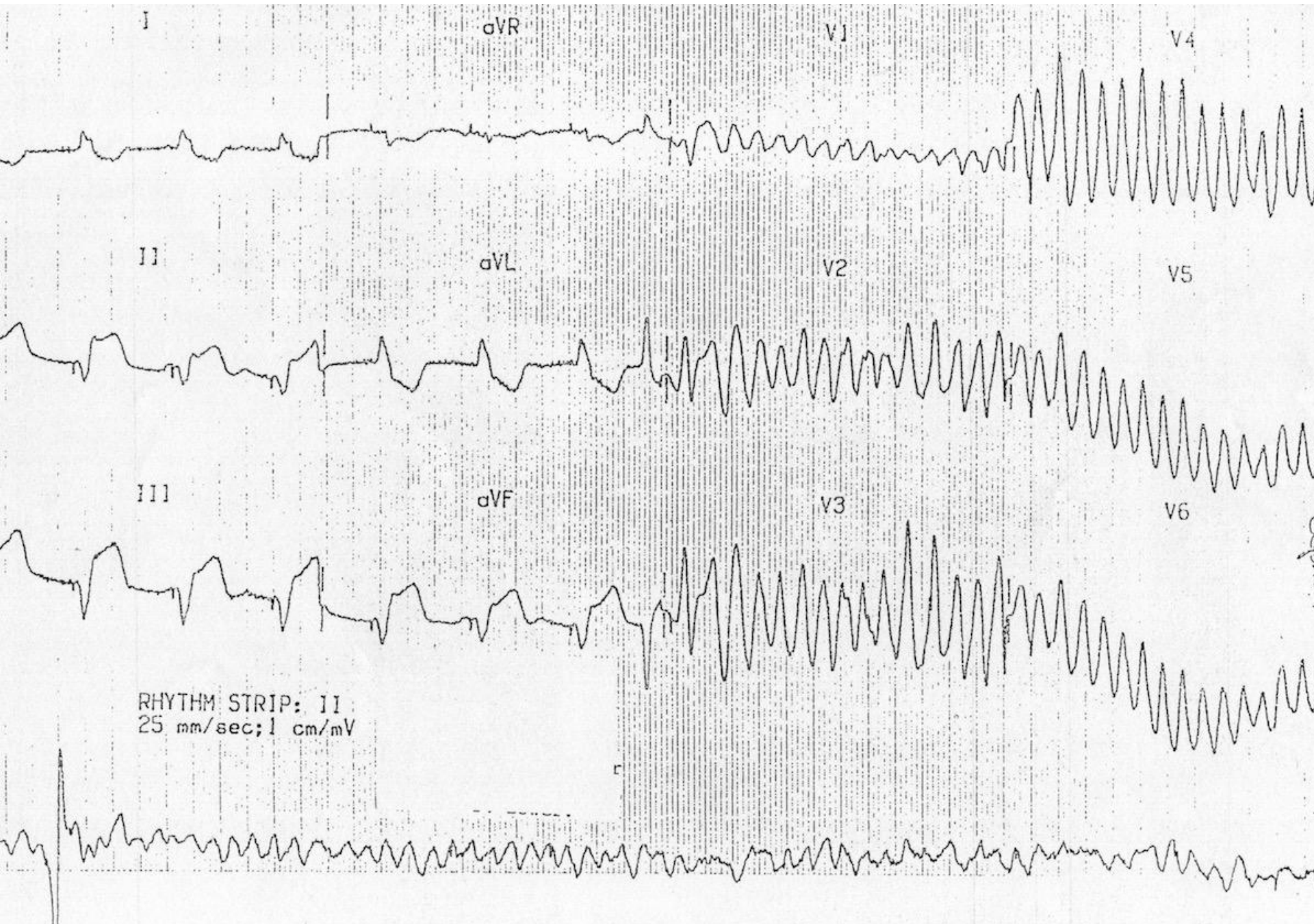
Clinical Significance of Ventricular Fibrillation (VF)

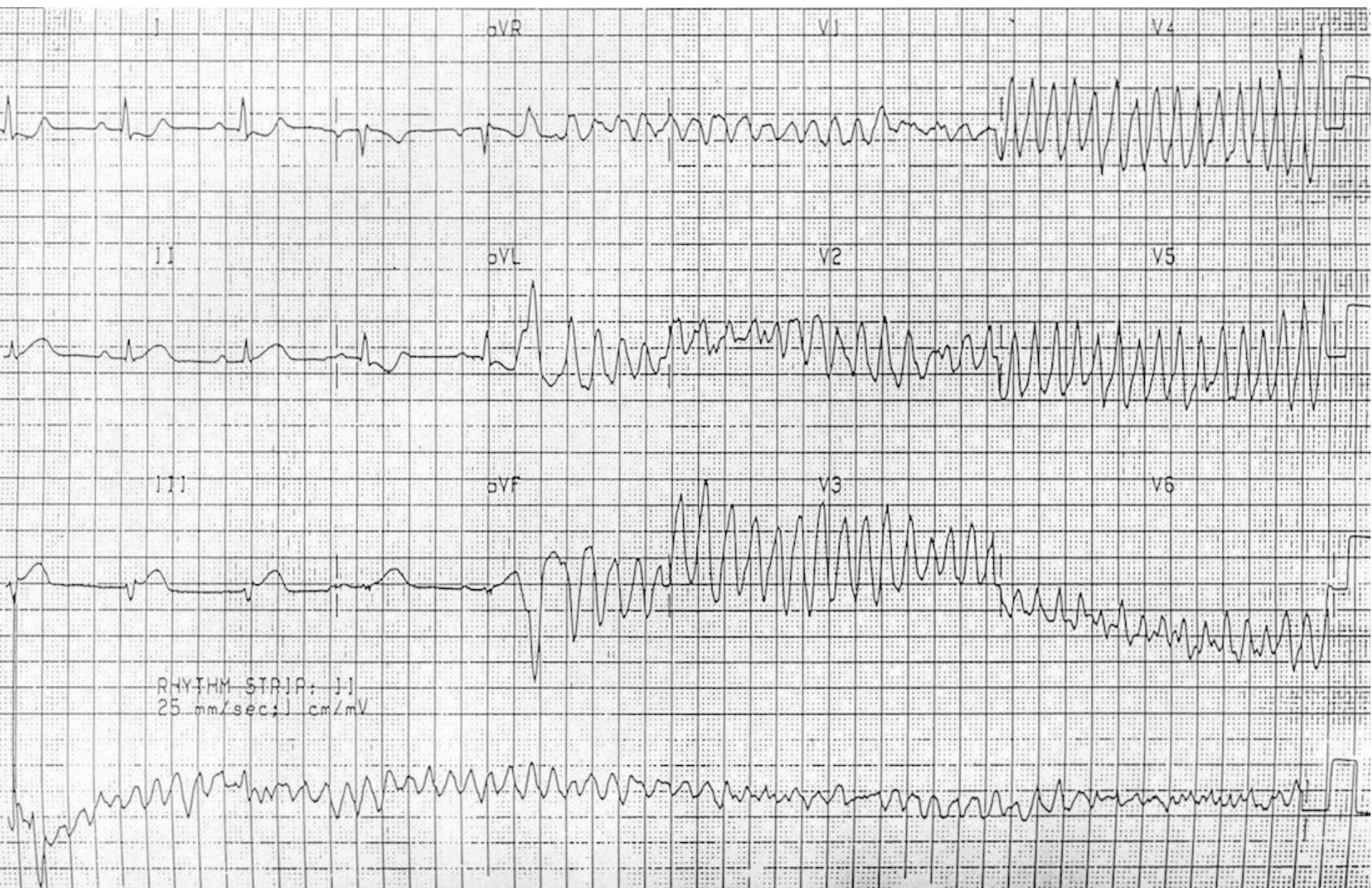
Ventricular fibrillation (VF) is the the most important shockable cardiac arrest rhythm.

- The ventricles suddenly attempt to contract at rates of up to 500 bpm.
- This rapid and irregular electrical activity renders the ventricles unable to contract in a synchronised manner, resulting in immediate loss of cardiac output.
- The heart is no longer an effective pump and is reduced to a quivering mess.
- Unless **advanced life support** is rapidly instituted, this rhythm is invariably fatal.
- Prolonged ventricular fibrillation results in decreasing waveform amplitude, from initial coarse VF to fine VF and ultimately degenerating into asystole due to progressive depletion of myocardial energy stores.









ID#: [REDACTED] 7Dec81 9:14:12 HR:133

▼ Shock 6 368J

▼ Charging to 368J

Paddles

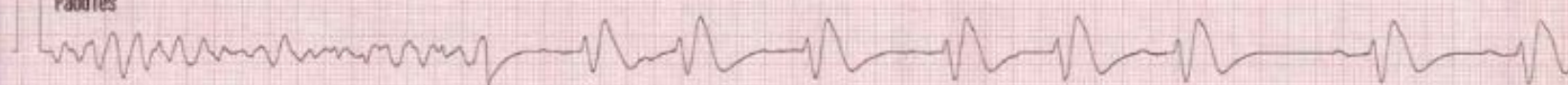


ID#: [REDACTED] 7Dec81 9:15:00 HR:23

▼ Shock 7 368J

368J Available

Paddles



ID#: [REDACTED] 7Dec81 9:16:15 HR:133

▼ Shock 8 368J

Paddles



ID#: [REDACTED] 7Dec81 9:18:52 HR:83

▼ Shock 9 368J

Paddles



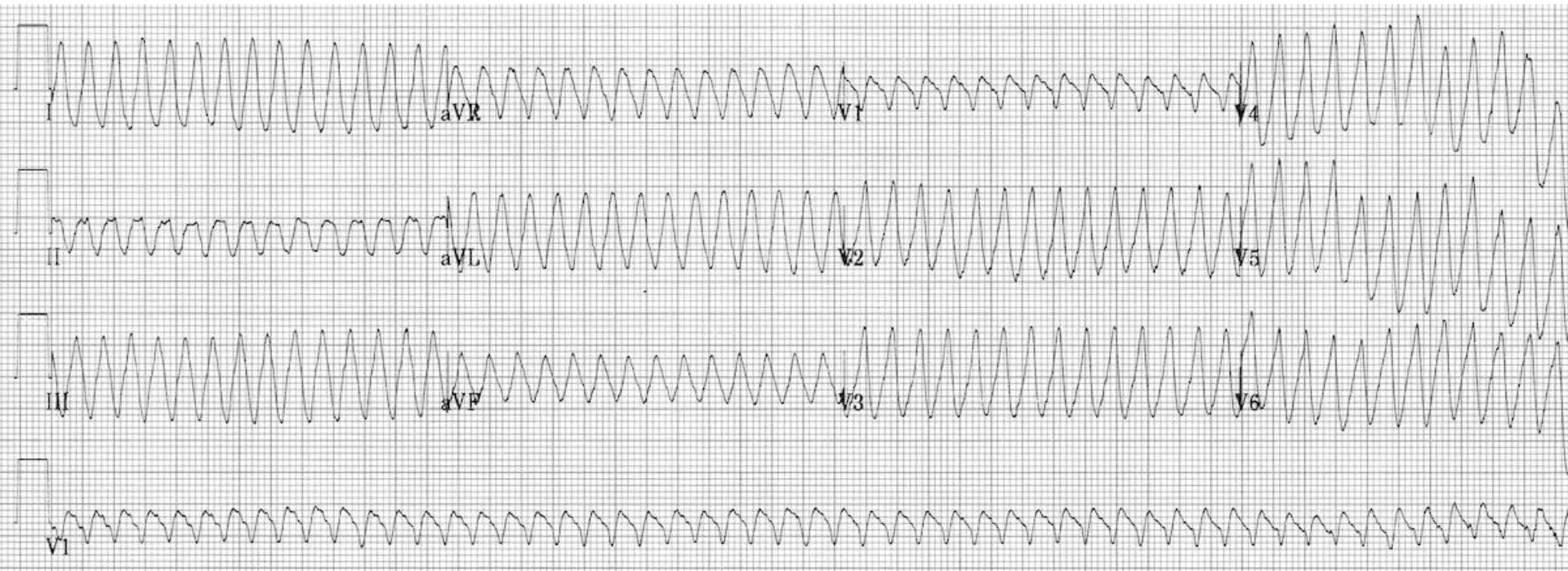
ID#: [REDACTED] 7Dec81 9:24:19 HR:158

▼ Shock 10 368J

Paddles



Қарыншалар дірілі

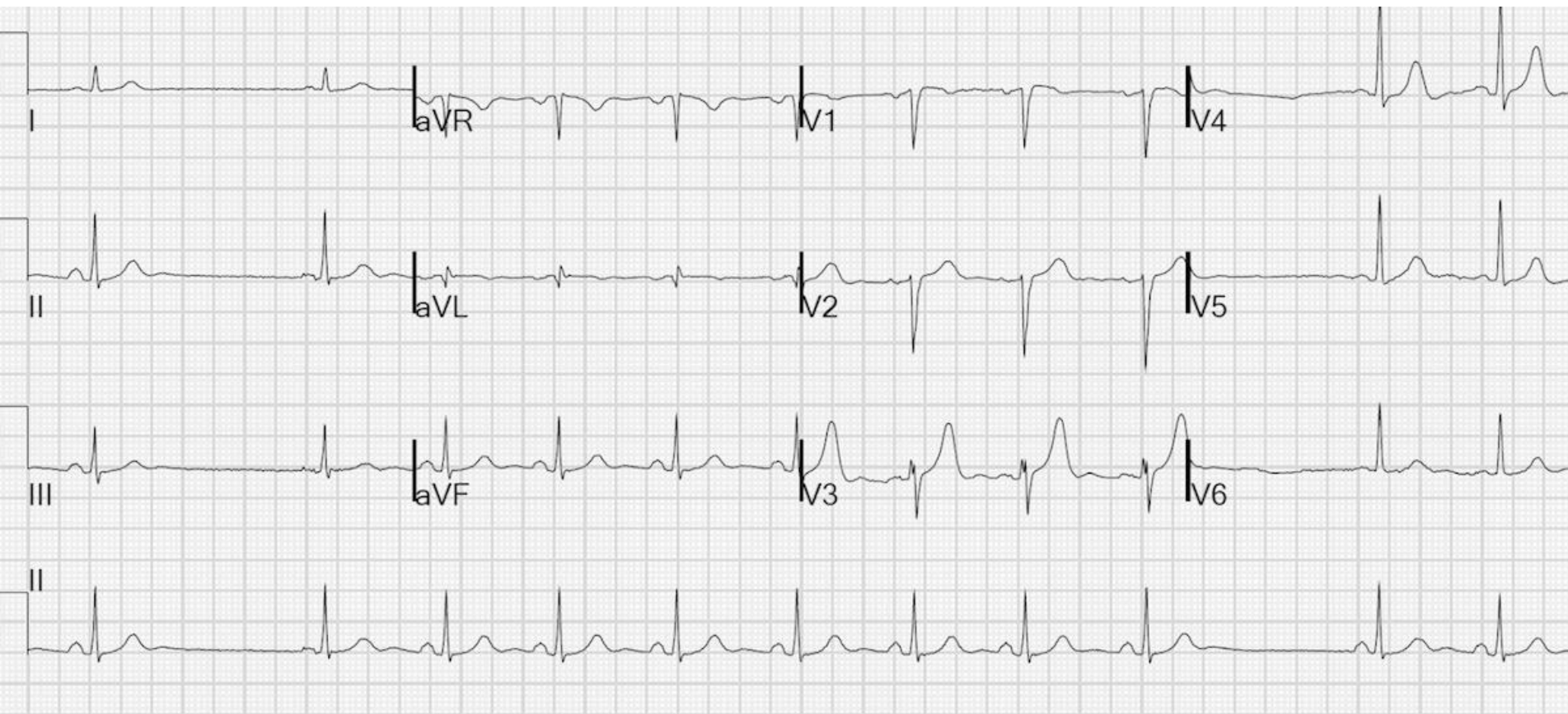


How to Recognise Ventricular Flutter

- Continuous Sine Wave
- No identifiable P waves, QRS complexes, or T waves
- Rate usually > 200 beats / min

Непрерывная Синусоидальная Волна. Нет идентифицируемых Р-волн, комплексов QRS или Т-волн. Тариф обычно > 200 ударов / минута

САТ блокадасы



САТ блокадасы 1 дәржелі

First Degree SA block

= Delay between impulse generation and transmission to the atrium.

- This abnormality is not detectable on the surface ECG.

Задержка между поделением импа Ульс и передачей к предсердию. Эта аномалия не обнаруживается на поверхности ЭКГ.

САТ блокадасы 2 дәржелі, тип 1

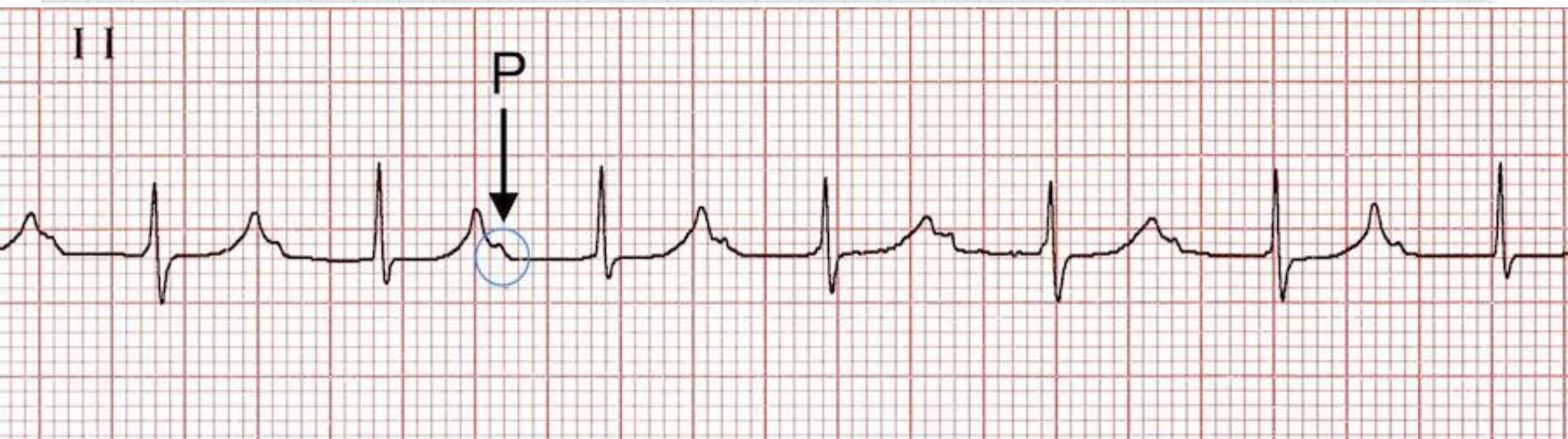
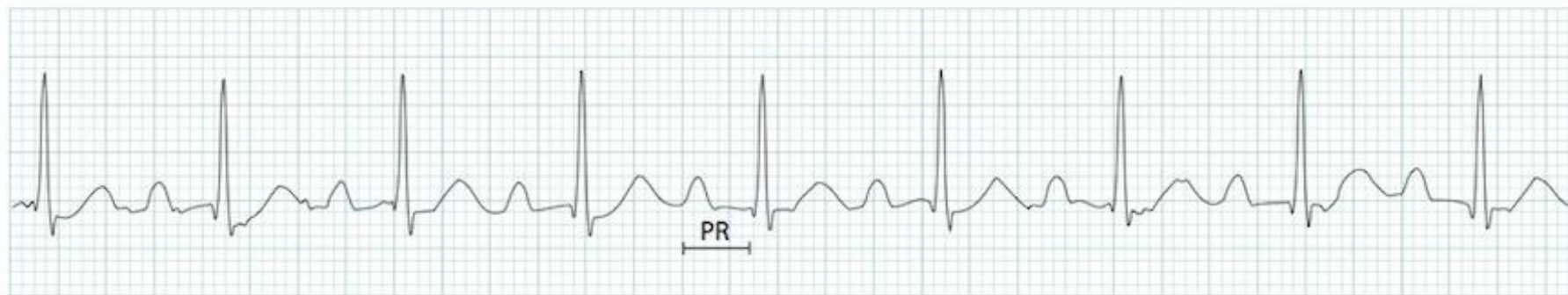
САТ блокадасы 2 дәржелі, тип 2

CAT блокадасы 3 дәржелі

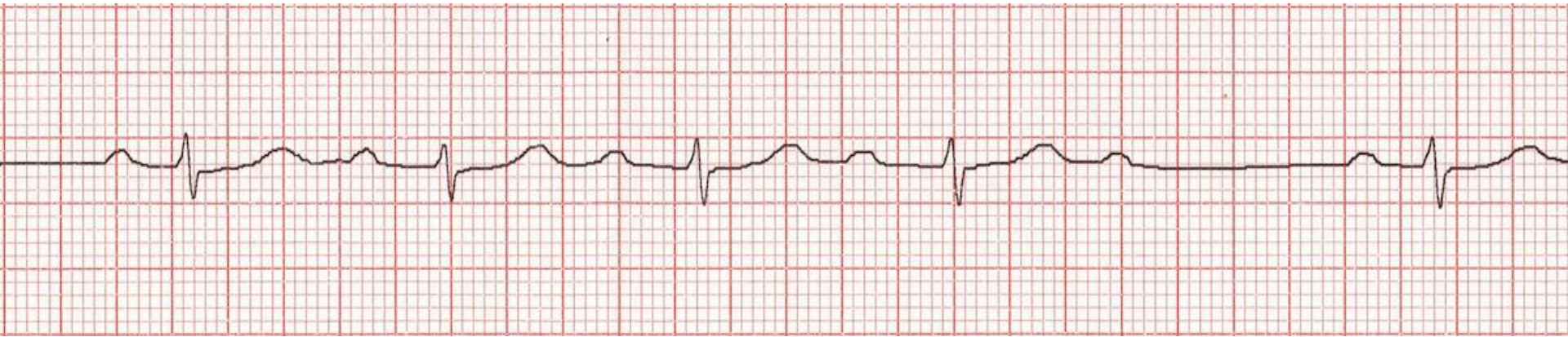
Атриовентрикулярлы блокада

Атриовентрикулярлы блокада, 1 дәрежелі

PR interval > 200ms (five small squares)



Атриовентрикулярлы блокада, 2 дәрежелі, Мобитц 1



The PR interval is longest immediately
before the dropped beat

The PR interval is shortest immediately
after the dropped beat

The P-P interval remains relatively
constant

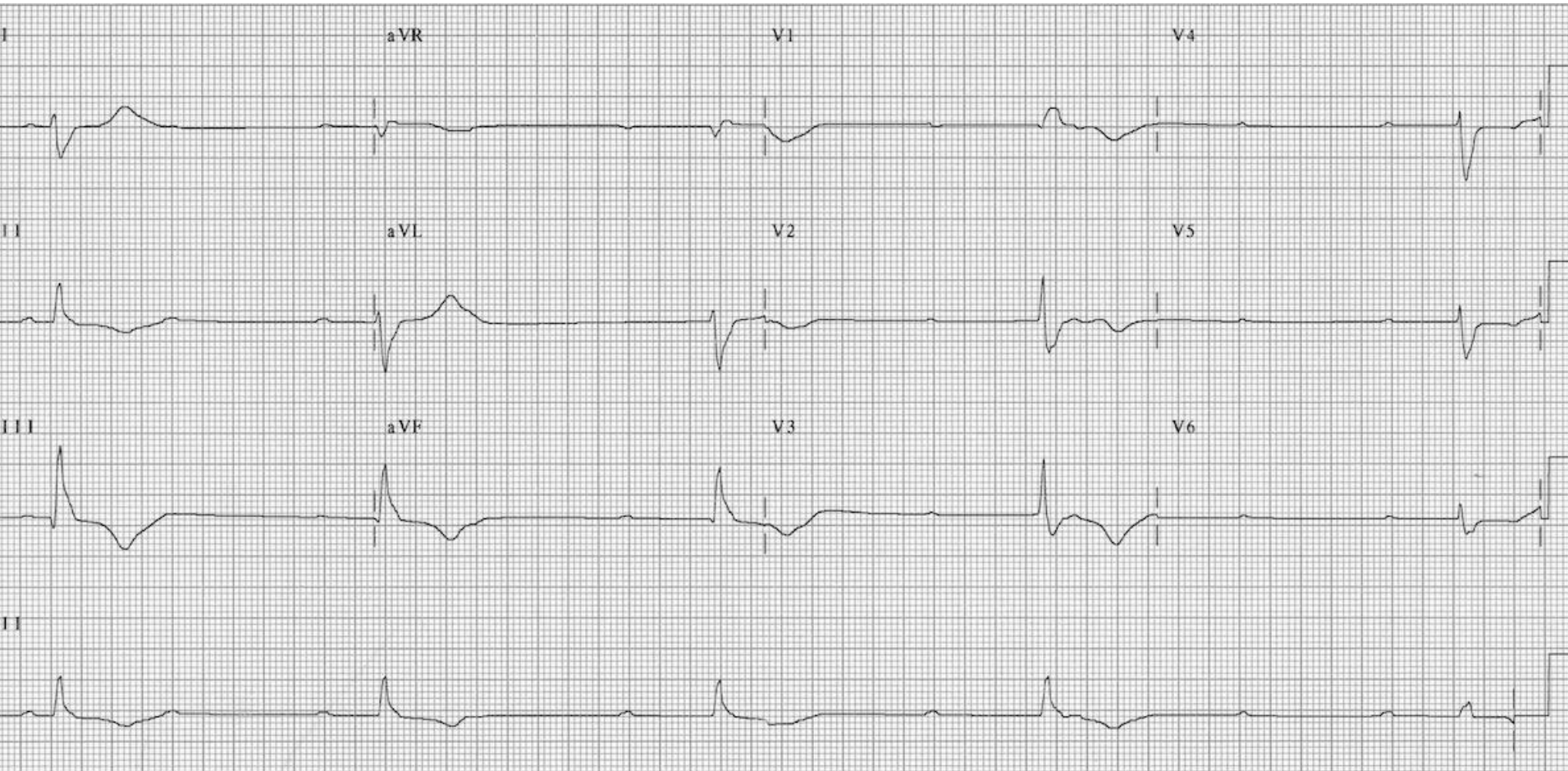
Интервал PR-это длинный
непосредственно перед
выпавших битьИнтервал PR
самый короткий сразу после
отброшенного удара

Атриовентрикулярлы блокада, 2 дәрежелі, Мобитц 2

- Дәл алдыңғыдай бірақ PR интервалдары бірдей болады

Атриовентрикулярлы блокада, 3 дәрежелі

Ритм ырғақты болу керек



Гис будасының блокадасы

 The first (and only) wave is positive and thus an R wave.	 The first wave is large and positive (R), followed by a small negative wave (s).	 Initially a small positive wave (r), followed by a large negative wave (S).	 The first wave is negative and small (q), followed by a large positive wave (R), and finally a small negative wave (s).
 Initially a large negative (Q), then a large positive wave (R).	 A single negative wave is called a QS-complex.	 A large negative wave (Q), followed by a small positive wave (r).	 The negative wave manages to pass the baseline, and is therefore qualified as an S wave.
 Initially a small negative wave (q), followed by a large positive wave (R).	 Notching on the upstroke of the R wave.	 The negative deflection does not manage to pass the baseline and can therefore qualify as an s wave.	 Examples of fragmented QRS-complexes.

- https://www.nottingham.ac.uk/nursing/practice/resources/cardiology/function/q_wave.php
- <https://www.ausmed.com/articles/ecg-lead-placement/>
- <https://ecgwaves.com/ecg-normal-p-wave-qrs-complex-st-segment-t-wave-j-point/>
- <https://emedicine.medscape.com/article/151066-overview>
- https://learningcentral.health.unm.edu/learning/user/onlineaccess/CE/bac_online/atrial/flutter.html