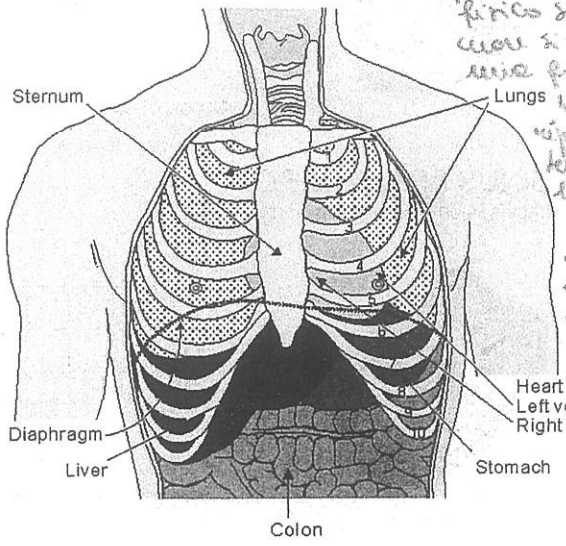
LEZIONE 1

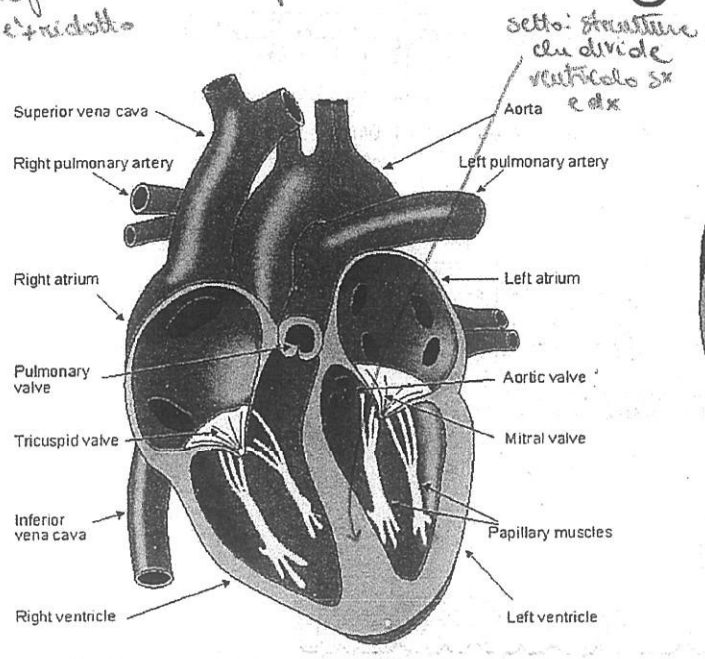
Cenni su anatomia e fisiologia

- Situato nel torace, dietro lo sterno e davanti ai polmoni
- Circondato dal pericardio
- Dimensioni di un pugno chiuso, peso250-300g
- Parte superiore: grandi vasi (vena cava superiore inferiore, arteria e vena polmonare, aorta)



ANCHE FIBRE PURKINJE E NODO ATRIOVENTRICOLARE SONO CELLULE PACEMAKER (CIOE' AUTOATTIVANTI

Cenni su anatomia e fisiologia



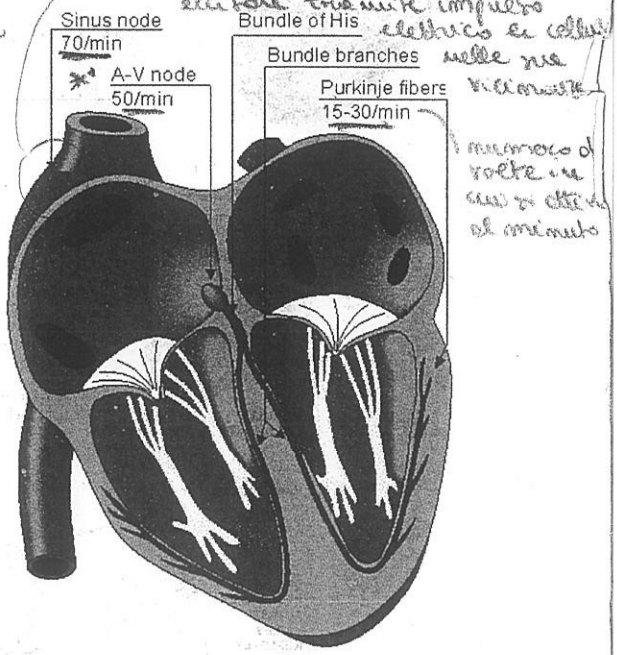


fig.2: *Anatomia del cuore e vasi ad esso associati*

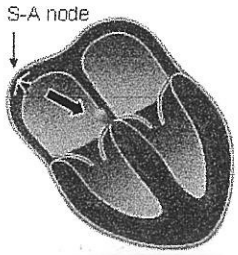
ASIMMETRIA DIMENSIONI CARDIACHE: spessore di ventricolo dx e' minore del sx perche' il sx deve imprimere sempre alla grande circolazione *, il dx alla pic

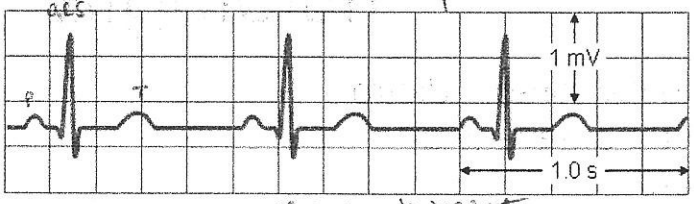
tutti con QRS piuttosto normali

NORMAL SINUS RHYTHM

Impulses originate at S-A node at normal rate

alcune patologie si rilevano vedendo alterazioni temporali delle caratteristiche onde ripetute nel diagramma rispetto ECG





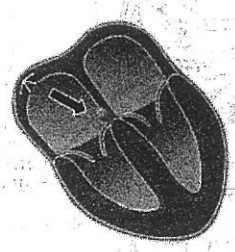
All complexes normal, evenly spaced Rate 60 – 100/min.

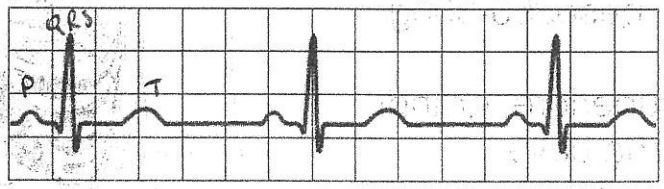
uniformemente spaziati

sequenza attivazione normale

SINUS BRADYCARDIA

Impulses originate at S-A node at slow rate





velocità ripetizione < 60 volte al minuto

All complexes normal, evenly spaced Rate < 60/min. + distanziati rispetto al normale

Come identificarli con una procedura automatica?

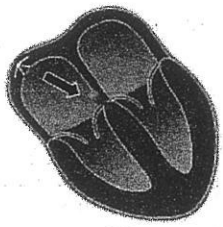
↳ estrarre frequenze cardiache o inverso periodo ripetizione ECG

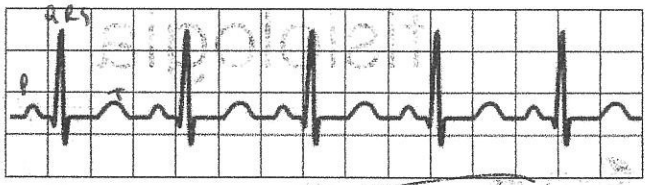
l'esperimento prese ventricolare dx → tende a portare + vs dx dipolo emicuore e dep. ventricolare (I deriv. complesso QRS con ampiezze minore e morfologia doppia in II deriv.)

IPERTROFIA

SINUS TACHYCARDIA

Impulses originate at S-A node at rapid rate

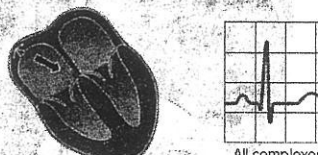


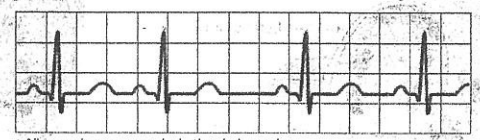


All complexes normal, evenly spaced. Rate >100/min.

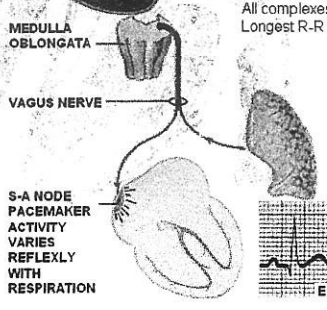
SINUS ARRHYTHMIA

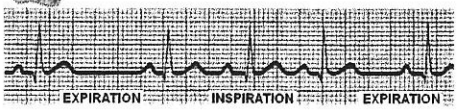
Impulses originate at S-A node at varying rate





All complexes normal, rhythm is irregular
Longest R-R interval exceeds shortest > 0.16 s

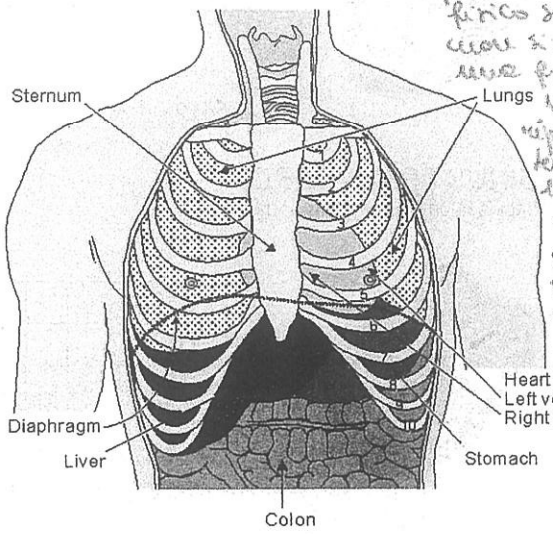




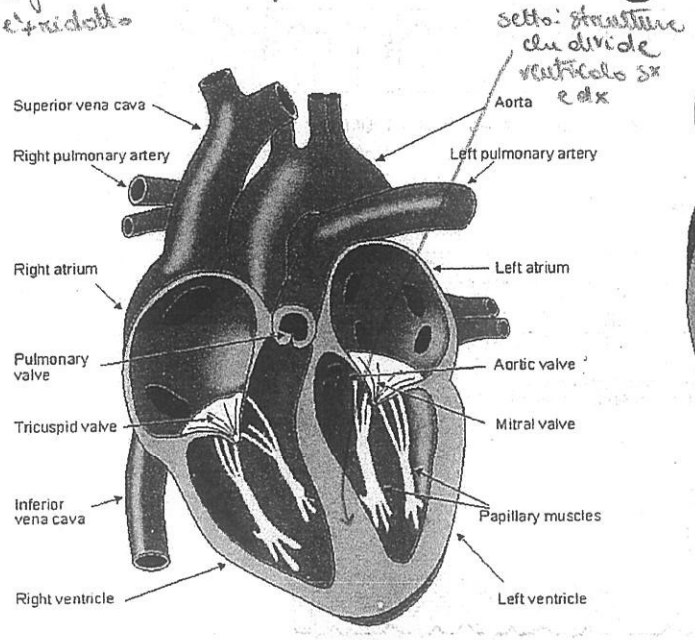
LEZIONE 1

Cenni su anatomia e fisiologia

- Situato nel torace, dietro lo sterno e davanti ai polmoni
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Cenni su anatomia e fisiologia



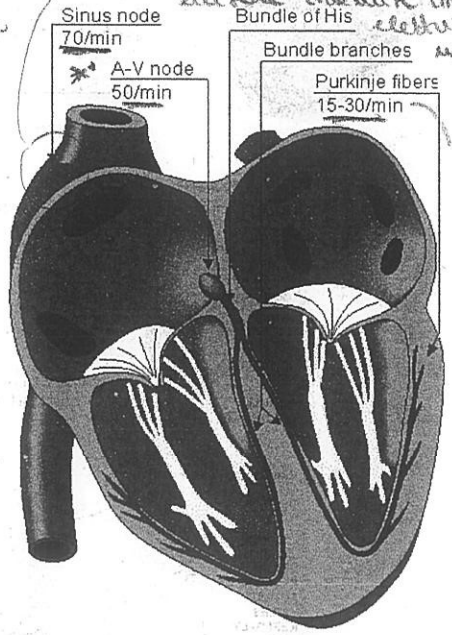


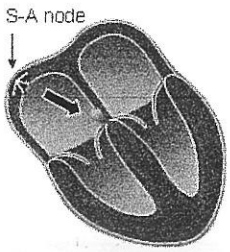
fig.2: *Anatomia del cuore e vasi ad esso associati*

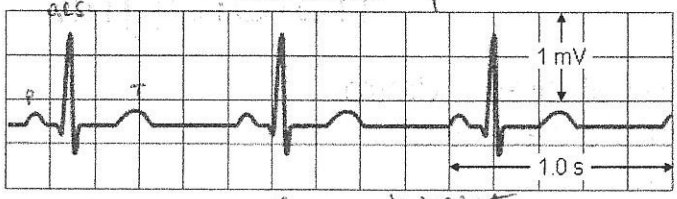
tutti con QRS piuttosto normali

NORMAL SINUS RHYTHM

Impulses originate at S-A node at normal rate

elenco patologie x riferirmi vedendo alterazioni temporali delle caratteristiche onde ripetute nel classico tracciato ECG





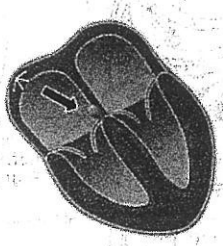
All complexes normal, evenly spaced. Rate 60 – 100/min.

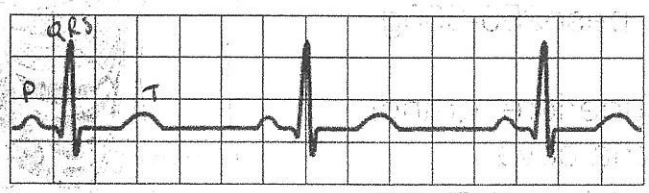
uniformemente spaziati

sequenza attivazioni normale

SINUS BRADYCARDIA

Impulses originate at S-A node at slow rate





[velocità ripetizione < 60 volte al minuto]

All complexes normal, evenly spaced. Rate < 60/min. + distanziati rispetto al normale

Come identificarli con una procedura automatica?

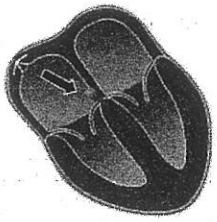
↳ intervallo frequenze cardiache o inverso periodo ripetizione ECG

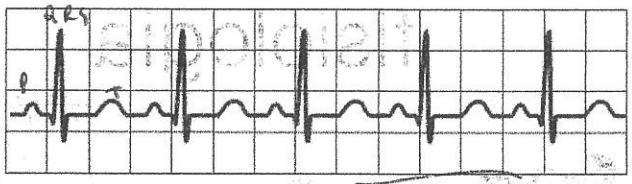
l'appiattimento onde ventricolari dx → tende a portare + vs dx dipolo emicuore e dep. ventricolare (I deriv. complesso QRS con ampiezza minore e magari anche negativo in II deriv.)

IPERTROFIA

SINUS TACHYCARDIA

Impulses originate at S-A node at rapid rate



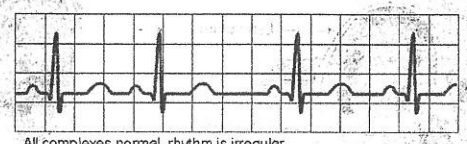


All complexes normal, evenly spaced. Rate >100/min.

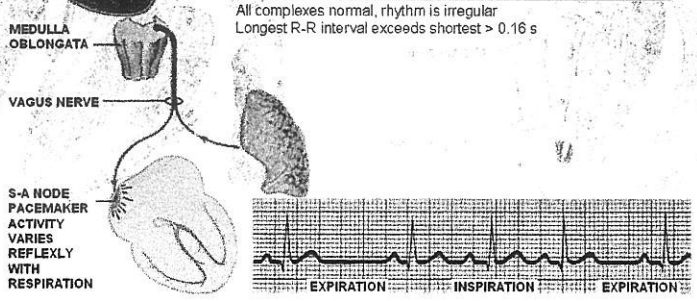
SINUS ARRHYTHMIA

Impulses originate at S-A node at varying rate

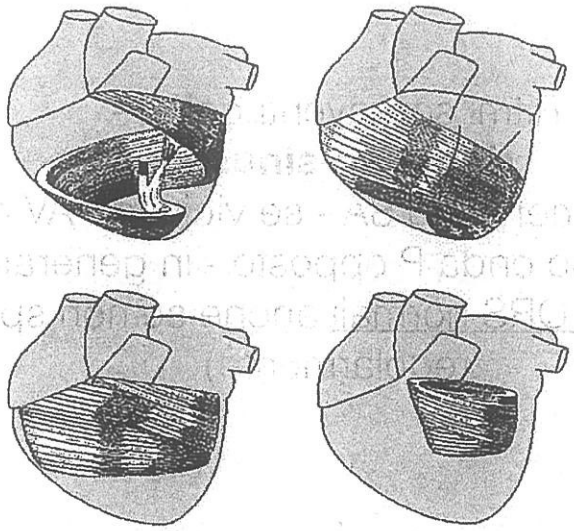




All complexes normal, rhythm is irregular
Longest R-R interval exceeds shortest > 0.16 s



Cenni su anatomia e fisiologia



4 gruppi di fibre principalmente che sono avvolti a spirale

Fig.3: Orientazione delle fibre del muscolo cardiaco

si manifesta con PdA tra loro diversi (PdA dei miociti nell' epicardio ≠ da quelli dei miociti nel miocardio etc..)

eterogeneità delle fibre e quindi dei miociti cardiaci nella muscolatura ventricolare

Propagazione

Table 6.1. Electric events in the heart

Location in the heart	Event	Time [ms]	ECG-terminology	Conduction velocity [m/s]	Intrinsic frequency [1/min]
SA node	impulse generated	0		0.05	70-80
atrium, Right	depolarization *)	5	P	0.8-1.0	
Left	depolarization	85	P	0.8-1.0	
AV node	arrival of impulse	50	P-Q interval	0.02-0.05	
	departure of impulse	125			
bundle of His	activated	130		1.0-1.5	
bundle branches	activated	145		1.0-1.5	
Purkinje fibers	activated	150		3.0-3.5	
endocardium Septum	depolarization	175		0.3 (axial)	
Left ventricle	depolarization	190		-	20-40
epicardium			QRS	0.8	
Left ventricle	depolarization	225		(transverse)	
Right ventricle	depolarization	250			
epicardium Left ventricle	repolarization	400			
Right ventricle	repolarization			0.5	
endocardium Left ventricle	repolarization	600	T		

*) Atrial repolarization occurs during the ventricular depolarization; therefore, it is not normally seen in the electrocardiogram.

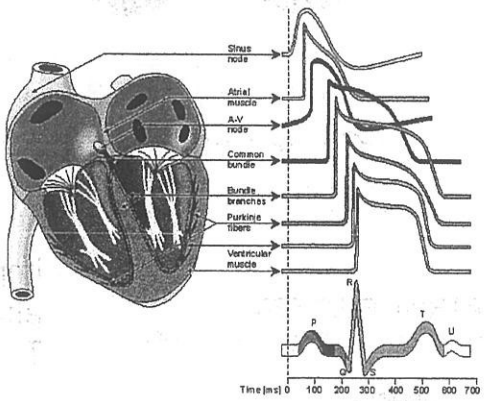


Fig. 6.7. Electrophysiology of the heart. The different waveforms for each of the specialized cells found in the heart are shown. The latency shown approximates that normally found in the healthy heart.