

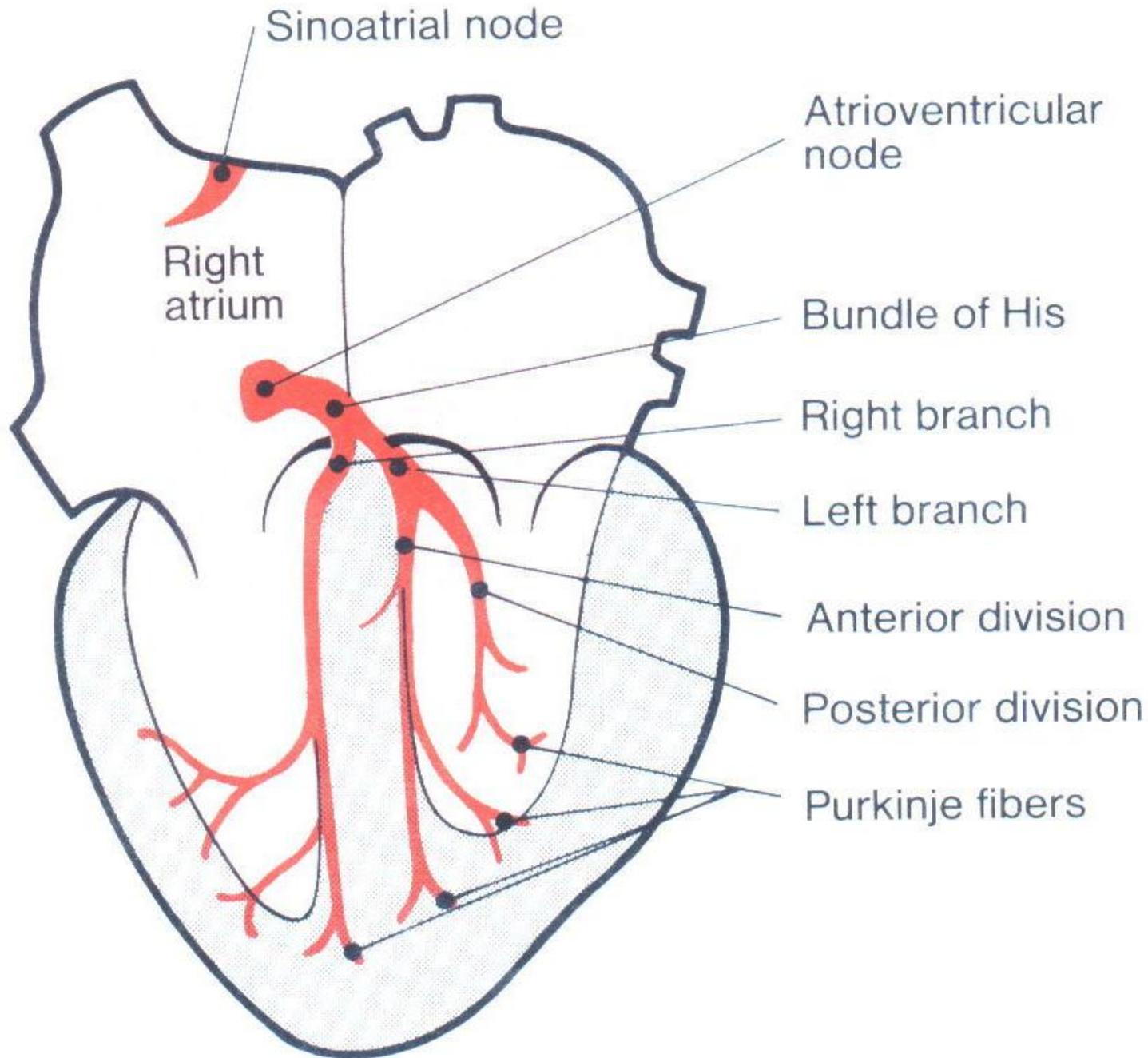
ARRHYTHMIAS

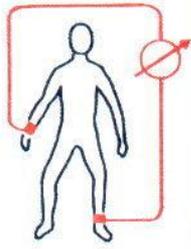
Incidence in childhood small, but a serious complication in children with congenital heart disease

The most common arrhythmia in childhood – supraventricular tachycardia 1 : 25 000

Normal heart rate

	sleeping child	wakefulness
0 - 2 years	60 - 120	90 - 160
3 - 10 years	50 - 110	65 - 120
11- 15 years	40 - 100	60 - 120



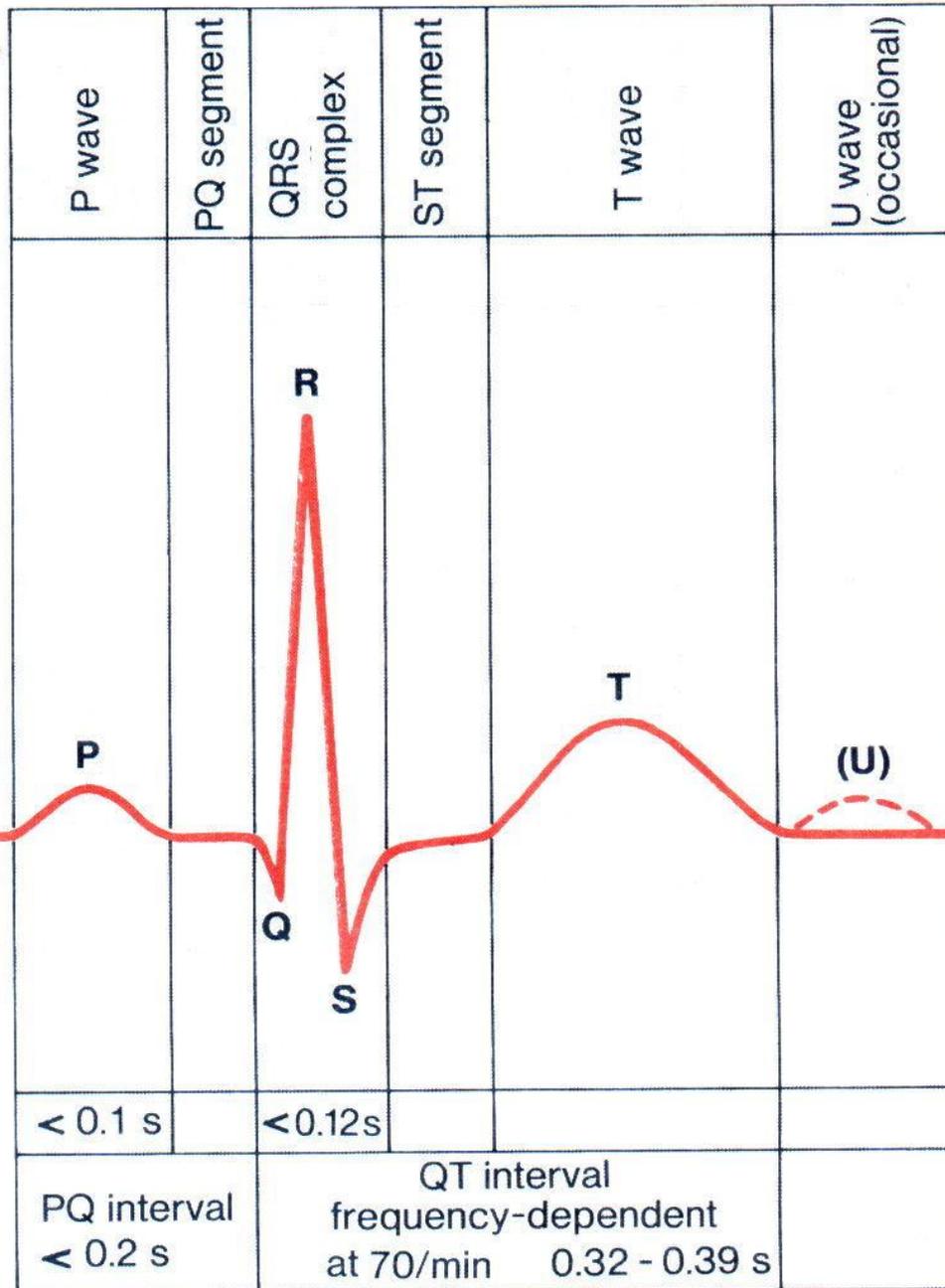


Calibr.

1 mV

+
0
-

Duration



1. Origin of excitation
2. Heart rate
3. QRS axis orientation
4. Intervals
5. Morfology of Pwave
6. Morfology of QRS
7. Morfology ST segm.
T event. U wave

PHYSIOLOGICAL ARRHYTHMIAS

Respiratory arrhythmia – very often in children

During inspiration acceleration of heart rate, during expiration retardation of heart rate

After load / running.../ respiratory arrhythmia disappears during acceleration of heart rate

Supraventricular extrasystoles - about 12/h in 14% children during 24 hours follow up

Ventricular extrasystoles – common, occurring in 1-2% of normal infant and up to 50% of healthy teenagers and adults, during exercise testing disappear

Atrioventricular disturbances of conduction - in 11 % of children during sleep

1. Congenital arrhythmias

- a/ prenatal impairment of conducting system by inflammation
- b/ systemic lupus erythematosus in mother
- c/ impairment of conducting system in the heart with congenital heart disease

2. Others obtained :

- a/ postoperative
- b/ boreliosa, viral diseases of myocardium
- c/ disorders in Na,K, Ca levels in plasma
- d/ influence of hormones
- c/ drug intoxication
- d/ hypoxia
- e/ tumors

3. Idiopathic

Diagnostic tools

History

Physical examination

ECG in rest and during exercise testing

Holter – ECG during 24 hours

Electrofysiological studies

Echocardiography

Therapy

drugs

kardiostimulation

Cathetrization and surgical ablation

BRADYCARDIA

Incidence :

newborns, teenagers, sportsmen, in hypothyreosis, after intracranial injure with increase of intracranial pressure, therapy with Digoxin, beta blockers, hyperkalemia, cardiac surgery for congenital heart disease

Cause:

dysfunction of sinoatrial node

atrioventricular disturbances of conduction I.-III.

/ danger = sudden loss of consciousness due to cardiac arrest or ventricular fibrillation, sudden death/

ECG diagnosis

The atria and ventricles beat independently in complete AV block, incomplete AV block is characterized by interruption of conduction at intervals

Drug therapy :

heart rate below 40/min

Atropin 0,1mg/5kg i.v.

Isoprenaline - from 0,05 ug/kg/min to až do 0,5ug/kg/min

When cardiostimulation??

a/ ventricular rate in newborn and infant below 55/min / in CHD below 65/min/

b/ ventricular rate below 45/min in children

c/ syncope , heart failure, fatigue during exercise

SUPRAVENTRICULAR TACHYCARDIA

Is defined as a very rapid heart rate up 200/min with narrow QRS complexes

1 : 25 000

a/ reentry phenomenon

b/ arrhythmogenic focus outside the sinus node

Epidemiology :

CHD, result of cardiac surgery due to CHD, stress,
WPW sy, kardiomyopathy, myokarditis

Physical examination:

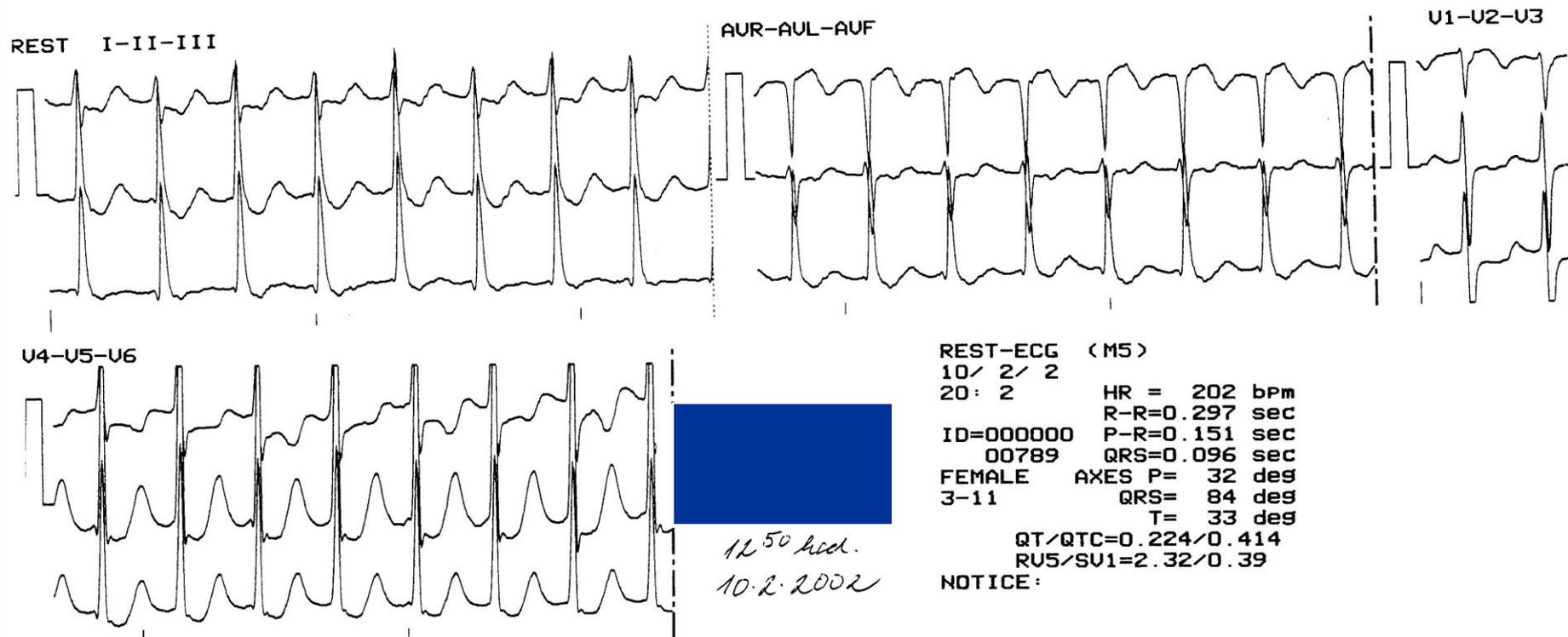
Heart rate - 200-300/min

infants- change of behavior, problems with feeding, sweating,
cyanosis, heart failure symptoms

children - palpitation , nausea

ECG

Narrow QRS complexes , wave P is in wave T , RP shorter than PR ,heart rate up 200/min



TERAPHY of supraventricular tachycardia:

Vagal stimulation

/ the face in cold water, emetic reflex...../

adenosine - ADENOCOR /Sanofi-Winthrop/- 0,1 - 0,3 mg/kg i.v.
/quick bolus/

propafenon - RYTMONORM / Knoll/ - 1 mg/kg i.v. during 5min

verapamil - ISOPTIN /Knoll/ - 0,1 mg/kg i.v. during 30s

Kardioversion 0,25 - 0,5 J/kg

Digoxin