

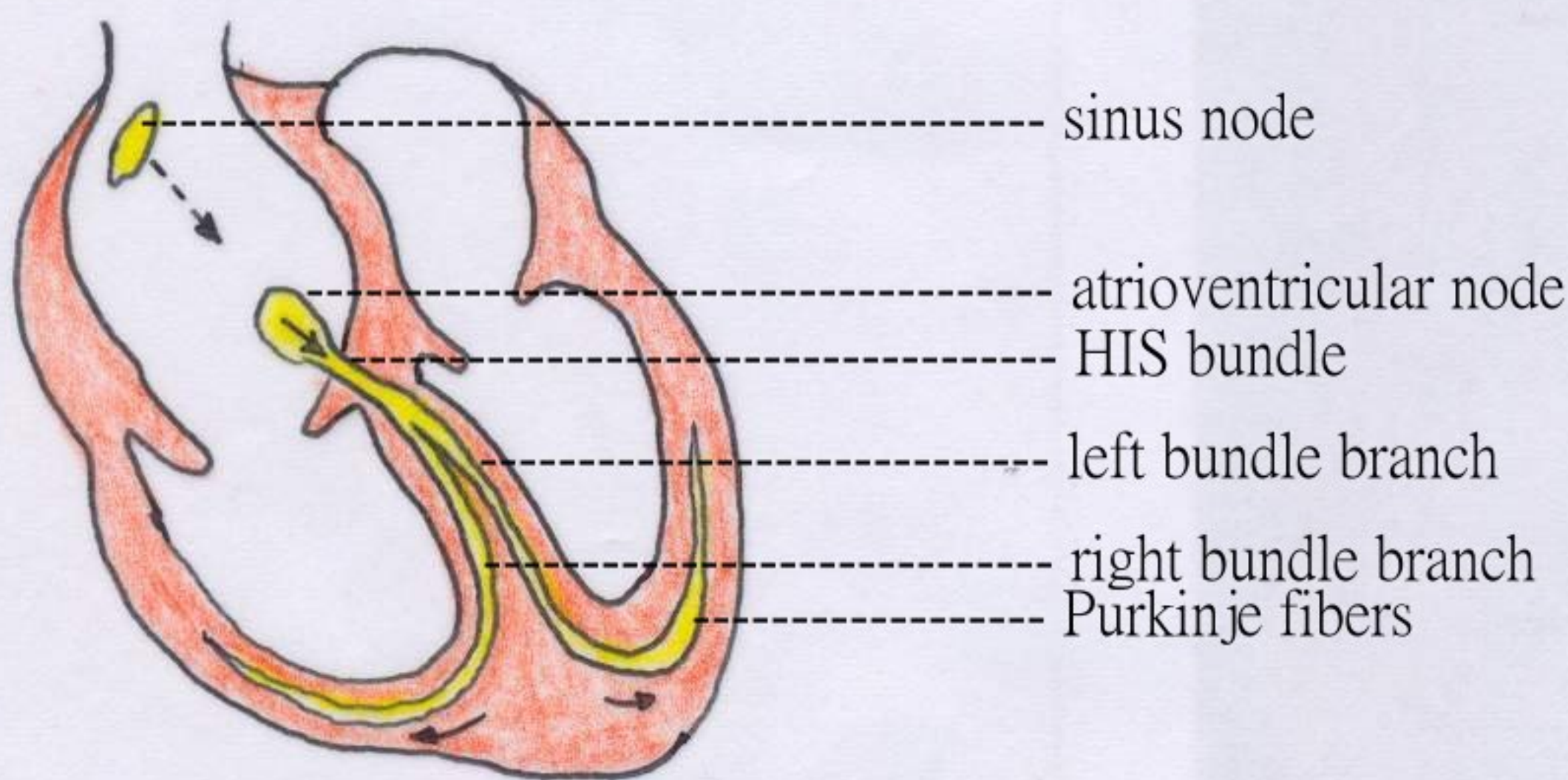
Cardiac arrhythmias

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Cardiac arrhythmias = abnormal heart beats

Heart Conduction System

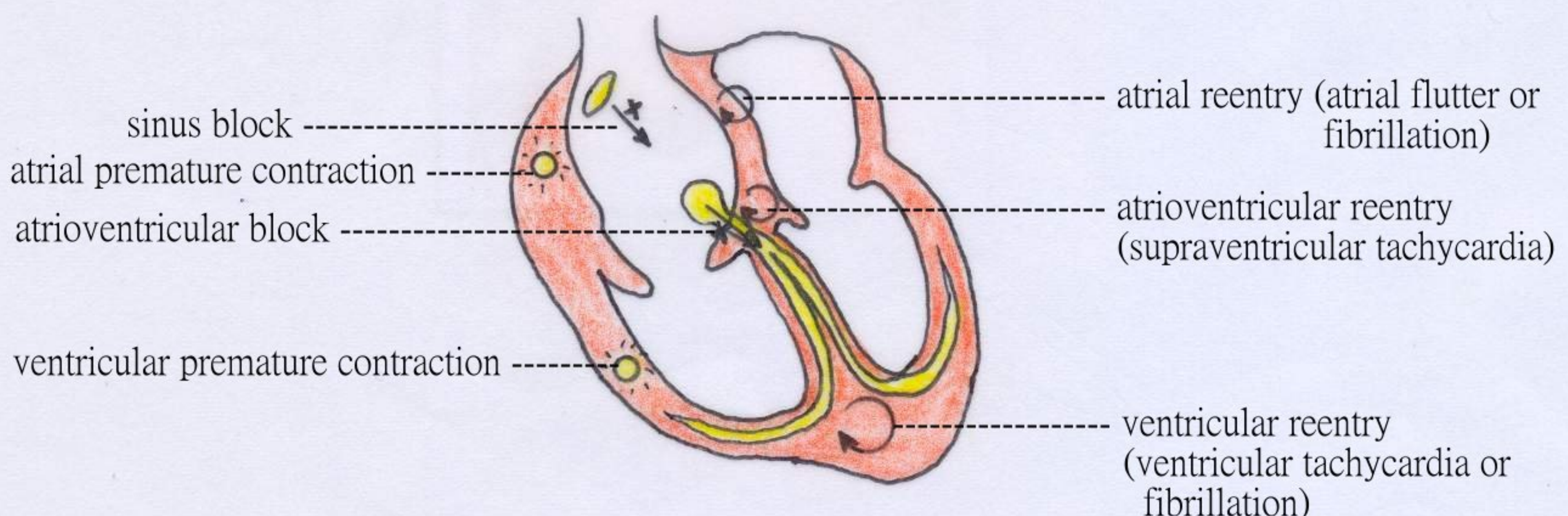
- the sinus node in right atrium, atrioventricular node between atrium and ventricle, HIS bundle, left and right bundle branch and Purkinje fibers in ventricles possess specialized myocardial tissues which can regularly elicit electrical impulses --> myocardial cells regularly depolarize (heart contraction) and repolarize (heart relaxation) --> heart beats
- normal sinus rhythm = electrical impulses initiated at sinus node, subsequently stimulate the heart conduction system (that is, sinus node --> atrioventricular node --> HIS bundle --> left and right bundle branches --> Purkinje fibers) and elicit regular heart beat and rhythm.



- these electrical impulses can be detected and recorded by the surface electrocardiogram to determine normal or abnormal heart beat and rhythm

Types of cardiac arrhythmias and mechanisms

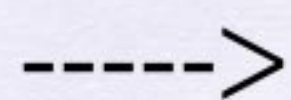
Cardiac arrhythmias arise from abnormal impulse formation other than the heart conduction system (= ectopic beats or premature contractions), and abnormal impulse conduction (eg. bradycardia, tachycardia, heart block etc) or reentry conduction (eg. atrial or ventricular tachycardia or fibrillation etc)



Cardiogenic sudden death

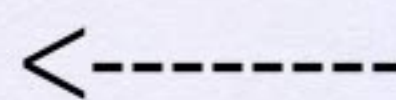
structural factors

myocardial infarction
heart hypertrophy
cardiomyopathy



cardiac arrhythmias

ventricular premature
contractions,
ventricular tachycardia,
ventricular fibrillation



functional factors

stress
drugs, poisons
metabolic disturbances

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cardiogenic sudden death

Symptoms of cardiac arrhythmias

dizziness



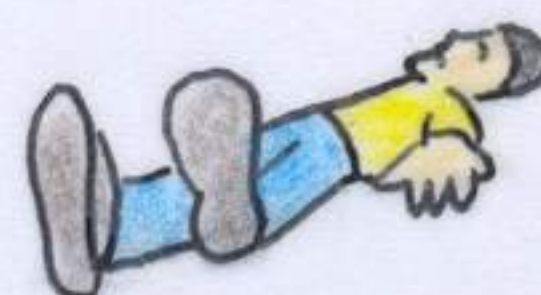
palpitation



heart failure



syncope, sudden death

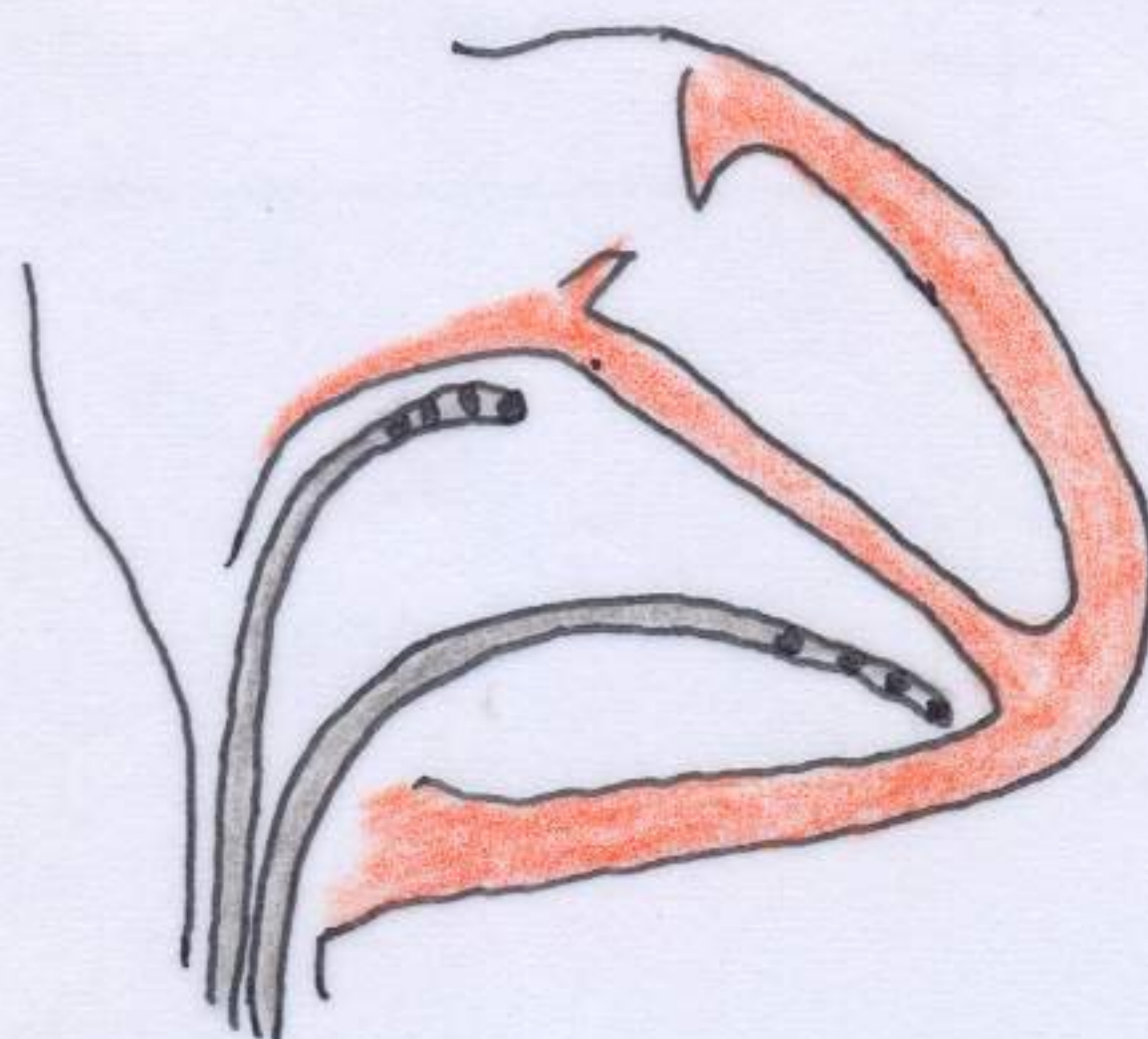


Management of cardiac arrhythmias

antiarrhythmic drugs



catheter ablation



implantable cardioverter-defibrillator

