

范例：抗心律失常藥物

BACKGROUND† Inside cell: K⁺; Outside cell: Na⁺, Ca⁺⁺, Cl⁻ Action potential (AP) and Phase 0-4 phase0---reactivity---conduction--- Na⁺ phase1----- K⁺ phase2, 3---early afterdepolarization--- Ca⁺⁺; K⁺ phase4---automaticity--- Na⁺ ---delayed afterdepolarization-- Ca⁺⁺--Na⁺ Effective Refractory Period: membrane potential \sim -60 mV Y|Z-

o^lZ ZA+Z^o+HZH^lJ B J
 r^lB B₁L_rrJ B₁L^lJ B₁L_rrJ L₁L₁ L₁rN B₁L₁F₁L
 B₁L_rrJ B₁L^l+B₁L_rrJ B₁L₁F₁L #B₁L^lJ B F₁L N N₁L B₁L
 F₁L B₁L_rrJ 0B₁L^lJ B B₁L_rrJ B₁L₁F₁L// B₁L₁F₁L// B₁L₁F₁L// %
 B₁L b.^l_r^l -L_r^l BACKGROUND Classification of ARR
 according to The mechanism of ARR (disturbances of Impulse formation or conduction) The Site of the origin (SupraVentricular, V.) HR increased or not (Tachycardia, Brady.) Etiology Carditis, AMI, CHD, coffee, tea, alcohol, drug& # O_rH₁J₁J f f f 3 f

3 f f f f f f
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 ' Γ Mechanisms of arrhythmia 2 ← Γ ↑ Γ (Γ Γ Γ
 Mechanisms of arrhythmia " ← Γ → Γ
 2Electrophysiologic effects of Antiarrhythmic drugs \$ ↑ Γ L Ø Γ L + 1. To
 decrease Automaticity Increase MDP, Slow down slope of phase 4 , increase threshold potential (TP)
 2. To reduce post depolar. and triggered activity accelerate repolar. current to decrease EAD inhibit
 inward ion to decrease EAD increase TP to decrease EAD increase outward repolar. current to increase
 MDP antagonize cellular Ca to impaired IAD Inhibit Na influx to impaired IAD $\downarrow \text{L} \downarrow \text{ZU} \downarrow \text{Z1} \downarrow \text{Z2}$ Z₂

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 effects of Antiarrhythmic drugs \$↑r^L ↓r^L + O_r3.To change membrane responsiveness, so to
 change the conduction, hence to terminate reentry To increase MR so suppress unidirectional block To
 decrease MR so change unidirectional block to bidirectional block 4.To change ERP and APD so
 terminate reentry Absolutely prolong ERP and APD Relatively prolong ERP(shorten APD) Symmetric
 ERP r^LZuZ-^LZQ_r*Z_r // -r^L // "r

Antiarrhythmic agents Classification → sodium channel antagonists A → block Na⁺ C ++, quinidine B → lidocaine C → +++ flecanide a! → -R blockers: propranolol b! → selective prolong repolar.: amiodarone c! → CCBs: verapamil Z// i ↳ v [x] ↳ € € H€ € € #€ €

Antiarrhythmic agents-II
 antagonists Mechanism -R, Na, ERP + K Clinic use SVT, Af, hyperthyrosis ADR SB, AVB, HF,
 Hypotension, Asthma. // % // % ! ' \$
 3 ! % // ! % // " >> Antiarrhythmic agents-
 III Selectively prolong repolarization ?# \$// \$!& Mechanism
 (Amiodarone) : block K+, Na+, Ca++ Pharmacological actions " Reduce automaticity in sinoatrial node
 and PF " slow conduction in atrioventricular node and PF " prolong ERP in atria and PF Clinic uses :
 " Supraventricular(atrial fibrillation), ventricular (tachycardia/fibrillation) tachyarrhythmias
 AR:photosensitive skin, thyroid abnormalities(hypo- and hyper-), pulmonary fibrosis, corneal
 deposits, neurological and gastrointestinal disturbances F+Z€ Z+Z`+Z Z '

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Times New Roman|宋体 Tahoma Wingdings Blends Antiarrhythmic Agents BACKGROUND BACKGROUND

1. To decrease Automaticity Increase MDP, Slow down slope of phase 4, increase threshold potential (TP) 2. To reduce post depolar. and triggered activity accelerate repolar. current to decrease EAD inhibit inward ion to decrease EAD increase TP to decrease EAD increase outward repolar. current to increase MDP antagonize cellular Ca to impaired LAD Inhibit Na influx to impaired LAD // ZU+Z1+Z Z // 返口 :「 // P \ddot{x}

2. Electrophysiologic effects of Antiarrhythmic drugs \$↑ \downarrow

3. To change membrane responsiveness, so to change the conduction, hence to terminate reentry To increase MR so suppress unidirectional block To decrease MR so change unidirectional block to bidirectional block 4. To change ERP and APD so terminate reentry Absolutely prolong ERP and APD Relatively prolong ERP(shorten APD) Symmetric ERP r] + ZU+Z- + ZQ \ddot{x} *Z] //

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Antiarrhythmic agents-IA IA Quinidine Mechanism ()Na---phase-0,4 Pharmacologic effects conduction automaticity(pukinje fiber) ERP, APD Block alpha adrenoceptor so cause vasodilation Anti-M-cholinoceptor to increase heart rate c0 \uparrow 3 3 \uparrow Antiarrhythmic agents-IA Clinical use (broad !! spectrum) Common in Atrial Fibrillation and flutter occationally in ventricular tachycardia. ADR: 1.Cinchonism (headache, dizziness, tinnitus) 2.gastrointestinal effects (diarrhea, nausea, vomiting) 3.allergic reaction(angioneurotic edema) 4.Quinidine syncope(characterized by recurrent lightheadedness and episodes of fainting) z

Antiarrhythmic agents-IA #IA procainamide Mechanism :

Γ^L ; $\Delta\Gamma^L$ e Γ^L Clinic use : first choice for ventricular tachycardia and fibrillation after myocardial infarction Adverse reaction : Least cardiotoxic effects Neurologic: paresthesias, tremor, convulsions, slurred speech, hearing disturbances, lightheadedness

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 agents-Ib \$ $\text{H}_1 \text{r} \text{L}_1 \text{H}$ IB-phenytoin sodium Mechanism similar to lidocaine Pharmacologic
 effects * decrease automaticity in PF * compete with cardiac glycoside for combination of Na-K-
 ATPase Clinic use: to treat digoxin-induced dysrhythmias I + Zd + $\text{H}Z$ + Z(+ $\text{H}Z$ + $\text{H}Z$) L
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>^_ ^UJ ^U!+^U4 Antiarrhythmic

agents-II -R antagonists Mechanism -R, Na, ERP + K Clinic use SVT, Af, hyperthyrosis ADR SB, AVB, HF, Hypotension, Asthma. //%

” € >+ Γ^L ” >Antiarrhythmic agents-III Selectively prolong repolarization ? Γ^L #
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 ” Reduce automaticity in sinoatrial node and PF ” slow conduction in atrioventricular node and PF ”
 prolong ERP in atria and PF Clinic uses : ” Supraventricular(atrial fibrillation), ventricular
 (tachycardia/fibrillation) tachyarrhythmias AR:photosensitive skin, thyroid abnormalities(hypo- and
 hyper-), pulmonary fibrosis, corneal deposits, neurological and gastrointestinal disturbances

Antiarrhythmic agents-IV CCB:verapamil
 Pharmacological actions " reduce automaticity in sinoatrial node and atrioventricular node by slowing P-4 velocity " slow conduction in atrioventricular node " prolong ERP Clinic uses: " to prevent or terminate recurrence of paroxysmal SVT; " to reduce the ventricular rate in patients with atrial fibrillation

Others : adenosine Mechanism: Inhibit atrioventricular nodal conduction Increase atrioventricular nodal refractory period Pharmacokinetics: t_{1/2} <10 s Clinic use: paroxysmal supraventricular tachycardia; WPW Z\$ v[Z+Z] v[Z-] Z +Z/+Z |E₁| Antiarrhythmic agents *Drugs to treat Bradycardia Atropine Igo > + +

agents *drugs to treat Bradycardia Atropine, Iso. > $\text{I}^{\circ}\text{G}^{\circ}$
 $\text{L}^{\circ}\text{G}^{\circ}$ Antiarrhythmic agents-ADR 8Common ADR of Antiarrhythmic
 agents is proarrhythmia. $\rightarrow \$\text{L}^{\circ}\text{G}^{\circ}\text{J}^{\circ}$ \square $\rightarrow \text{G}^{\circ}\text{L}^{\circ}\text{G}^{\circ}$ Review
 & questions | The classification of arrhythmia The classification of Antiarrhythmic agents

The mechanisms of them Common ADR of them 7.4 € 0.1 U =

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