

论著

异丙嗪加重清开灵注射液导致的心律失常

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摘要 目的 研究异丙嗪(PMZ)对清开灵注射液(QKL)所致心律失常的影响。方法 ① 豚鼠在体心脏实验:按照QKL 3.1→15.5→31→93 ml·kg⁻¹的顺序累加静脉推注,每组持续5 min,于处理后5 min记录心电图;按照QKL 31 ml·kg⁻¹→PMZ 7.67 mg·kg⁻¹→PMZ 38.35 mg·kg⁻¹的顺序累加静脉推注,每组持续5 min,于处理后5 min记录心电图。② 豚鼠离体心电图实验:按照QKL 3.3→33→66→99 ml·L⁻¹的顺序灌流,每一组灌流持续5 min,分别记录各浓度组给药5 min后的心电图;按照QKL 33 ml·L⁻¹→QKL 33 ml·L⁻¹+PMZ 1 μmol·L⁻¹→QKL 33 ml·L⁻¹+PMZ 10 μmol·L⁻¹→QKL 33 ml·L⁻¹+PMZ 30 μmol·L⁻¹→QKL 33 ml·L⁻¹+PMZ 50 μmol·L⁻¹→QKL 33 ml·L⁻¹,每一组灌流持续5 min,分别记录各浓度组给药5 min后的心电图。③ 记录左心室乳头肌动作电位实验:按照QKL 3.3→33→66→99→165 ml·L⁻¹→洗脱的顺序灌流,分别记录每个浓度组的动作电位图形。按照QKL 99 ml·L⁻¹→QKL 99 ml·L⁻¹+PMZ 1 μmol·L⁻¹→QKL 99 ml·L⁻¹+PMZ 10 μmol·L⁻¹→洗脱顺序,分别记录每个浓度组的动作电位图形。结果 ① QKL 31 ml·kg⁻¹明显延长豚鼠在体心电图QRS及QTc间期。合用PMZ 38.35 mg·kg⁻¹进一步延长P-R, QRS间期及QTc间期,并能显著减慢心率(P<0.05)。② QKL 33 ml·L⁻¹延长豚鼠离体心电图QRS间期。合用PMZ 1, 10, 30或50 μmol·L⁻¹呈浓度依赖性延长P-R, QRS间期及QTc间期,并能显著减慢心率(P<0.05)。③ QKL 99 ml·L⁻¹合用PMZ 10 μmol·L⁻¹使豚鼠左心室乳头肌动作电位部分消失。结论 PMZ能加重QKL诱发的豚鼠心律失常,临床上应该谨慎使用PMZ抢救QKL导致的严重不良反应的患者。

关键词 异丙嗪 清开灵注射液 心律失常 动作电位

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Promethazine aggravates arrhythmia induced by Qing-kai-ling injection

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Abstract

OBJECTIVE To explore the effect of promethazine (PMZ) on arrhythmia induced by a Chinese herbal intravenous injection, Qing-kai-ling injection (QKL). **METHODS** ① *In vivo* ECG recordings were made to analyze effects of jugular intravenous (iv) injection of QKL alone and QKL plus PMZ on ECG in guinea pigs. QKL alone was injected in this order: 3.1→15.5→31→93 ml·kg⁻¹, while QKL+PMZ was injected in this order: QKL 31 ml·kg⁻¹→PMZ 7.67 mg·kg⁻¹→PMZ 38.35 mg·kg⁻¹. ② *In vitro* ECG recordings were made to analyze effects of QKL alone and QKL+PMZ on ECG in isolated hearts of guinea pigs. QKL alone was perfused in this order: QKL alone 3.3→33→66→99 ml·L⁻¹, while QKL+PMZ was perfused in this order: QKL 33 ml·L⁻¹→QKL 33 ml·L⁻¹+PMZ 1 μmol·L⁻¹→QKL 33 ml·L⁻¹+PMZ 10 μmol·L⁻¹→QKL 33 ml·L⁻¹+PMZ 30 μmol·L⁻¹→QKL 33 ml·L⁻¹+PMZ 50 μmol·L⁻¹→QKL 33 ml·L⁻¹. ③ Intracellular action potentials were recorded to analyze the effect of QKL alone and QKL plus PMZ on firing of action potentials. QKL alone was perfused in this order: QKL 3.3→33→66→99→165 ml·L⁻¹→normal perfusion solution, while QKL+PMZ was perfused in this order: QKL 99 ml·L⁻¹→QKL 99 ml·L⁻¹+PMZ 1 μmol·L⁻¹→QKL 99 ml·L⁻¹+PMZ 10 μmol·L⁻¹→normal perfusion solution. **RESULTS** QKL 31 ml·kg⁻¹ significantly prolonged QRS and QTc intervals *in vivo* ECG. QKL 31 ml·kg⁻¹ combined with PMZ 38.35 mg·kg⁻¹ not only further prolonged P-R, QRS and QTc intervals induced by QKL 31 ml·kg⁻¹, but also significantly reduced heart rate. 2 QKL 33 ml·L⁻¹ remarkably prolonged the QRS interval in isolated guinea pig hearts *in vitro*. QKL 33 ml·L⁻¹ combined with PMZ 1, 10, 30 or 50

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$\mu\text{mol} \cdot \text{L}^{-1}$ further significantly prolonged P-R, QRS and QTc intervals in a concentration-dependent manner and significantly reduced heart rate. ③ QKL $99 \text{ ml} \cdot \text{L}^{-1}$ +PMZ $10 \mu\text{mol} \cdot \text{L}^{-1}$ suppressed firing of action potentials from left ventricles of guinea pig hearts. **CONCLUSION** Promethazine aggravates the guinea pig arrhythmia mediated by QKL. Promethazine can not be clinically used to treat any severe side effect induced by QKL.

Key words [promethazine](#) [Qing-kai-ling injection](#) [arrhythmia](#) [action potential](#)

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