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吡喹酮对华支睾吸虫肠管超微结构的影响

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提要　大鼠于感染华支睾吸虫囊蚴后2个月，一次ig吡喹酮300 mg/kg，并于给药后1-36 h，观察吡喹酮对华支睾吸虫肠管超微结构的影响。结果表明该药对华支睾吸虫的肠绒毛有明显的变质性损害，且损害的程度随时间的延长而加剧，部位以接近肠腔的较严重。

关键词　华支睾吸虫；　吡喹酮；　肠；　上皮；　微绒毛

吡喹酮杀华支睾吸虫的作用主要表现在对皮层的损害[1,2]。吸虫类的皮层和肠管均有吸收营养等功能[3,4]。那么，吡喹酮是否也可进入肠腔对肠管产生同样损害？为此，本文就吡喹酮对华支睾吸虫肠管超微结构影响作了动态观察。

材料与方法

♂大鼠212±SD 8 g，每鼠ig接种华支睾吸虫囊蚴30个。在感染后2个月给药，用吡喹酮片剂（南京制药厂产品）加少量蒸馏水研磨成混悬液，一次ig 300 mg/kg，在给药后1，3，6，12，24和36 h，剖取肝脏成虫，自虫体后半部受精囊水平切取肠管，制备标本。每一时间点从1只鼠取3条虫，每条虫各取一段肠管标本，将其中一段肠管标本作10张切片观察，标本制备方法、步骤及所用电子显微镜型号同文献[1]。

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结　果

正常肠管组织　华支睾吸虫的肠管外层为肌层，肌层里面为基层和基质膜，后者常成褶伸入到由合胞体形成的上皮内。肠上表皮面有大量细长绒毛，具双层结构，呈板层状。绒毛的中心部分有一条由浓密小点形成的线，而在较薄的绒毛内，点线不明显，绒毛远端浆膜的两侧有时密接或完全融合成卷曲状，绒毛的表面有糖萼样丝状物。横切面上可见绒毛基部互相吻合或分支成网状。肠上皮细胞胞质内有丰富的粗面内质网，散在的线粒体和分泌小体；核呈圆形或长形，有的因核膜内陷变得不甚规整[5]（图1 A 见图版3）。

给吡喹酮后肠管的变化　药后1 h，部分肠绒毛的远端出现肿胀，其内的点线变得模糊不清甚至消失。在环曲的肠绒毛间有脂肪滴集聚（图1 B），肠上皮细胞内粗面内质网大部分扩张；药后3 h，肠绒毛除上述变化外，部分绒毛互相粘连。粗面内质网进一步扩张，有大量散在的核糖体（图1 C）。药后6 h，肠绒毛的改变与药后3 h的相似；药后12 h，一部分肠绒毛远端溶解消失，另一部分肿胀，其内的点线模糊不清（图1 D）；药后24 h，大部分肠绒毛的远端溶解消失。残存的肠绒毛多扩张成环状（图1 E）。粗面内质网继续扩张。肠上皮局部

有溶解现象；药后 36 h，肠绒毛远端呈弥漫性溶解坏死（图 1F）．肠上皮的改变与药后 24 h 的基本一致．肌层与基层在药后 1-36 h 均未见明显变化．

讨　论

实验结果表明，吡喹酮对华支睾吸虫的肠绒毛损害很严重，距肠腔愈远损害愈轻，至基层和肌层已无明显病变．由此可以说明，华支睾吸虫肠管的损害是通过虫口摄进吡喹酮入肠腔而引起的．从病变的动态过程来看，与该药作用于虫体皮层的情况[1,2]非常一致．即在药后 1 h 肠管与皮层都有病变发生；随着药后时间的延长，病变逐渐加重，药后 24-36 h 肠绒毛的远端弥漫性溶解坏死，皮层绒毛样突起的远端也溶解崩溃．故知吡喹酮对华支睾吸虫的杀虫作用是对皮层和肠管的双重损害．

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EFFECT OF PRAZIQUANTEL ON ULTRASTRUCTURES OF GUT EPITHELIA OF *CLONORCHIS SINENSIS*

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ABSTRACT Praziquantel was given intragastrically to rats at a single dose of 300 mg/kg two months after infection with *Clonorchis sinensis*. The electron microscopy of *Clonorchis sinensis* removed from the rats 1-36 h after medication showed some changes in the gut epithelia.

One hour after medication the distal microvilli (lamellae) were slightly swollen at some places and the dots within the microvilli became indistinct or even disappeared, and the granular endoplasmic reticuli (GER) were mostly expanded; 3-6 h part of the microvilli were adhered to each other and the granular endoplasmic reticuli were further expanded; 12-24 h partial lysis of the microvilli occurred; 36 h the distal microvilli were further lysed and degenerated.

The results showed that praziquantel has a remarkable damaging effect on the gut microvilli. The damage tended to be greater the longer after the medication. And the nearer the place was to the gut lumen, the severer the damage would be.

KEY WORDS *Clonorchis sinensis*; praziquantel; intestines; epithelium; microvilli

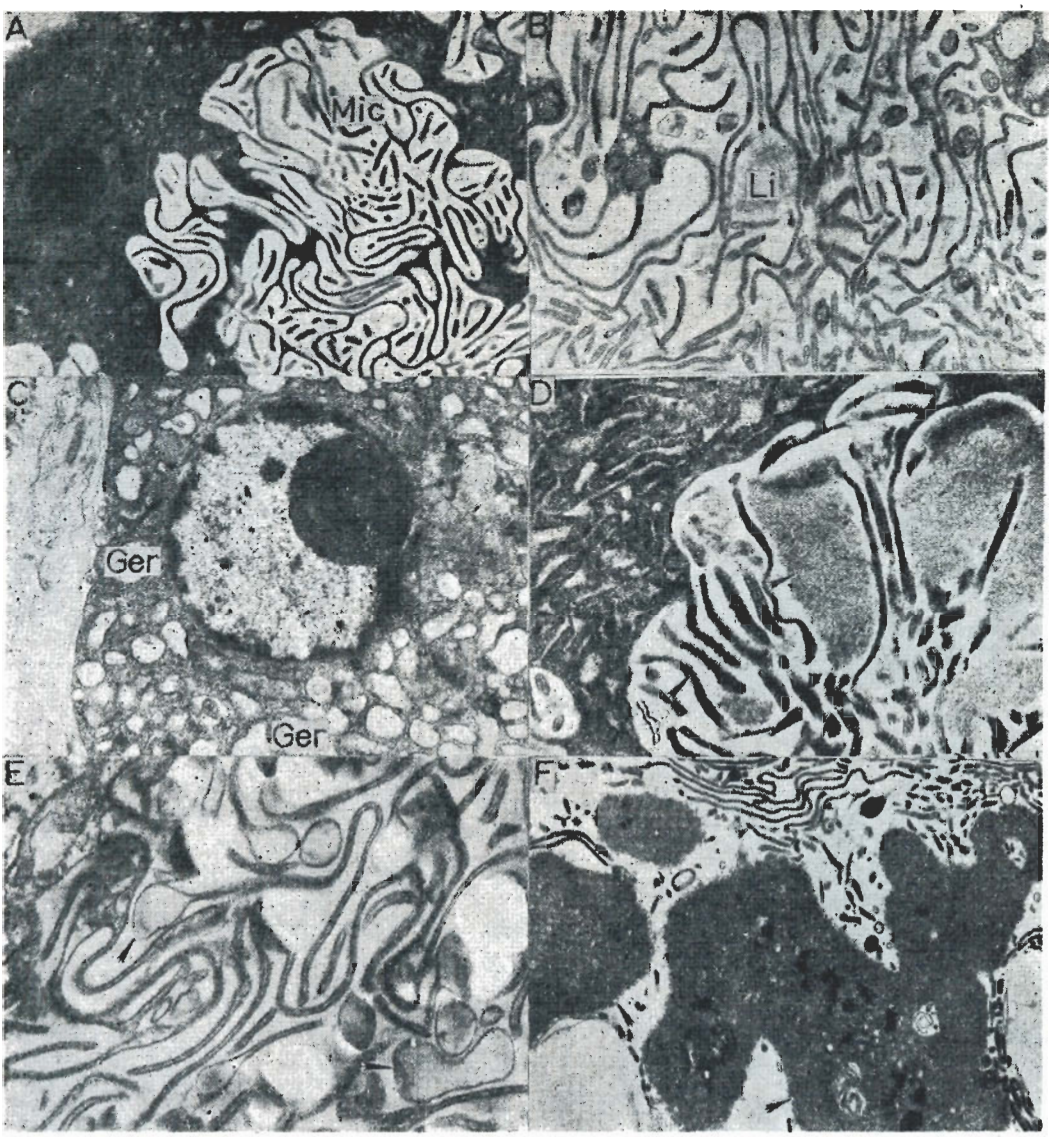

Fig 1. Gut epithelia of *Clonorchis sinensis* in rats given ig praziquantel 300 mg/kg 2 months after infection with 30 metacercariae. A) Normal ×21 000. B) Microvilli (Mic)were slightly swollen and the cores became indistinct in 1 h, ×30 000. C) The granular endoplasmic reticulum (GER) were expanded in 3 h, × 24 000. D) Partial lysis of distal microvilli (arrow) in 12 h, ×31 000. E) The distal ends of the remaining microvilli were dilated to become ring form (arrow) in 24 h, ×31 000. F) Microvilli were further lysed and degenerated (arrow) in 36 h, ×18 000.

(See p 283)