



亚洲带绦虫和牛带绦虫实验感染乳猪后 肝脏细胞凋亡的研究

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Study on Hepatocyte Apoptosis of Domestic Pigs Experimentally Infected with *Taenia asiatica* and *Taenia saginata*

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摘要

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摘要 【摘要】目的 观察亚洲带绦虫和牛带绦虫实验感染乳猪后不同时间囊尾蚴寄生处肝组织细胞凋亡的情况。方法 分别驱虫获取贵州省都匀市和从江县的人源亚洲带绦虫和牛带绦虫, 收集虫卵。20日龄三元杂交乳猪 (Duroc? 鄞Yorkshire? 鄞Landrace株) 19头, 随机分为亚洲带绦虫实验组6头、牛带绦虫实验组8头和对照组5头, 两实验组以定量虫卵15万个/头灌胃感染。于感染后第15、32、46和74天处死, 取两实验组囊尾蚴寄生处的肝组织和对照组肝组织, 常规病理切片, 苏木素? 伊红 (HE) 染色法观察组织病理变化, 原位末端标记法 (TUNEL法) 检测肝细胞凋亡指数, 透射电子显微镜观察凋亡细胞形态。结果 两实验组乳猪的感染率均为100%, 亚洲带绦虫实验组较牛带绦虫实验组肝脏上的囊尾蚴数量多且发育较好。HE染色结果显示, 两实验组均出现相似的肝脏组织病理学改变, 感染后第15和32天, 肝细胞水肿, 胞浆疏松化, 甚至气球样变, 并可见肝细胞点片状坏死, 感染后第46天, 部分肝细胞呈小灶性坏死, 感染后第74天, 以肉芽肿形成和局部性肝纤维化为特征。TUNEL结果显示, 感染后第46和74天, 亚洲带绦虫实验组 [(15.07±3.42)%] 和 [(27.33±0.92)%] 和牛带绦虫实验组肝组织细胞的凋亡指数 [(17.13±1.62)%] 和 [(34.20±0.73)%] 均明显高于对照组 [(9.53±1.06)%] 和 [(13.60±2.26)%] (P<0.05), 且牛带绦虫实验组均高于亚洲带绦虫实验组 (P<0.05)。透射电子显微镜观察发现, 两实验组肝组织内均可见明显的肝实质细胞凋亡的形态特征, 表现为细胞核体积缩小且皱缩变形, 染色质凝集成块并聚集于胞核边缘, 并可见典型的凋亡小体。结论 2种带绦虫囊尾蚴感染乳猪后中、晚期均可诱导明显的肝组织细胞凋亡。

关键词: 亚洲带绦虫 牛带绦虫 乳猪 肝脏 细胞凋亡

Abstract: 【Abstract】 Objective To investigate apoptosis in liver tissue of the domestic pigs infected with eggs of *Taenia asiatica* and *Taenia saginata*. Methods The adult worms of *T. asiatica* and *T. saginata* were collected and identified from the taeniasis patients in Dunnyun and Congjiang districts, Guizhou province. Eggs were collected from gravid proglottids and prepared by washing and centrifugation. Nineteen 20-day hybrid domestic pigs (Duroc-Yorkshire-Landrace strain) were randomly divided into *T. asiatica* group (6 pigs), *T. saginata* group (8 pigs) and control group (5 pigs). Each animal of experimental groups was infected with 1.5×10⁵ eggs by stomach injection. On day 15, 32, 46 and 74 after infection, animals were sacrificed and liver samples were collected for further experiments. The liver tissues were sliced for glass slides and prepared for ultrathin sections. The apoptosis of hepatocytes was identified by terminal deoxynucleotidyl transferase-mediated dUTP nick and labeling. The morphological features of liver tissue were observed under transmission electron microscope. Results The infection rate of two experiment groups reached 100%. Better developed cysticerci were found in liver of *T. asiatica* group than that of *T. saginata* group, but the liver pathological changes caused by cysticerci were similar. On day 15 and 32 after infection, hydropic degeneration, obvious vacuolization and some balloon-like degeneration were found in hepatocytes, and focal hepatic necrosis was observed. On day 46, spotty necrosis occurred in some local liver tissues. On day 74, main damages were granulomatous reactions surrounding cysticercus and focal liver fibrosis. On day 46, apoptosis index in *T. asiatica* group [(15.07±3.42)%] and *T. saginata* group [(17.13±1.62)%] was considerably higher than that in the control [(9.53±1.06)%] (P<0.05). On day 74, apoptosis index in *T. asiatica* group [(27.33±0.92)%] and *T. saginata* group [(34.20±0.73)%] was higher than that in the control [(13.60±2.26)%] (P<0.05), and the apoptosis index in *T. saginata* group was significantly higher than that of *T. asiatica* group (P<0.05). Simultaneously, morphological characteristics of apoptosis were clearly observed in hepatocytes in two experimental groups, showing shrunken, wrinkled and deformed nucleus with consolidation of chromosomes and appearance of apoptic body. Conclusion The hepatocyte apoptosis of domestic pig is induced in the middle and late stages of infection by the cysticerci of *T. asiatica* and *T. saginata*, indicating that hepatic apoptosis might be related to focal liver fibrosis of the host caused by the cysticerci.

Keywords: *Taenia asiatica* *Taenia saginata* Domestic pig Liver Apoptosis

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