Effect of Triclabendazole and Levamisole on Experimental Hydatid Cyst in Rat

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Abstract: Hydatidosis has dispersed worldwide and is one of the common dangerous diseases between human and animals and is found abundantly in areas that human, dogs and herbivorous are in close relationship. In this study, firstly, 32 rats were divided into two groups of control and case and 2000 protoscolices were injected into peritoneal hole. After 2 months, rats of case group were feed by drinkable 5 mL triclabendazole+3.41 mL levamisole for 60 days. Then, after 6 months of contamination period, rats of control group and case group killed by anesthetic drug then necropsy and guts inspection of hydatid cyst was implemented. The results show that in livers of control group there are 2 cysts in kidneys 9 cysts and in lungs 87 cases. Average of contamination in this group to hydatid cyst was 32.6 but in case group there were in liver on cyst in kidneys 5 cysts and in lungs 63 cysts. Average of guts contamination to hydatid cyst in case group was 23. Analyzing results in case and control groups shows that triclabendazole+levamisole drugs effect was 30% that this amount is not sufficient for hydatid cyst treatment.

Key words: Hydatid cyst, rat, triclabendazole, levamisole, drinkable, dangerous, Iran

INTRODUCTION

Species under genus Echinococcus are small tapeworms of carnivores with larval (metacestode) stages known as hydatid proliferating asexually in various mammals including humans (Xiao et al., 2005, 2006). Hydatid cyst has a worldwide distribution and has been recognized since ancient times (Lone et al., 2002). Human hydatidosis is a parasitic infection of the liver and other organs caused by the flatworm Echinococcus, most commonly E. granulosus which is a 5 mm long hermaphroditic tapeworm that has dog, foxes or coyotes as the definitive host and sheep, swine, cattle and zebra as the intermediate host. Hydatidosis is a cyclozoonotic infection of cosmopolitan distribution (Morris and Richards, 1992; Gossios et al., 1997). It is one of the main forms of parasitic disease in farm animals caused by the larval stage of Echinococcus tape worms which utilize canines as definitive host and various herbivores or rodent as intermediate host.

These cysts are characterized by cystic space occupying lesions in the liver, the lungs and rarely in other parts of the body (Dhalival and Kalkat, 1997; Halilolu et al., 1997; Topcu et al., 2000). Therefore, the aim of present study was to determine the effect of Triclabendazole on experimental hydatid cyst in rat.

MATERIALS AND METHODS

In this study, firstly, 32 rats were divided into two groups of control and case and 2000 protoscolices were injected into peritoneal hole. After 2 months, rats of case group were feed by drinkable 5 mL triclabendazole+3.41 mL levamisole for 60 days. Then, after 6 months of contamination period, rats of control group and case group killed by anesthetic drug then autopsy and guts inspection of hydatid cyst was implemented.

Then, number of hydatid cyst in internal organs especially liver, lungs and kidneys of rats were enumerated and also hydatid fluid aspirated and by light microscope for inspection of hydatid sand was studied (Fig. 1 and 2).

Fig. 1: Hydatid cyst into internal organs of infected rats

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RESULTS AND DISCUSSION

All results of present study in Table 1 and 2 have been shown. Table 1 and 2 shows the number of hydatid cyst in rats of control and case groups, respectively.

Hydatid disease is known since the time of Hippocrates. Although, the liver is the most common site of infection in adults, the most common site of infection in children is the lung (Topou et al., 2000; Halilolu et al., 1997; Halilolu et al., 1997). Hydatid disease is seen endemically among sheep raising communities. The disease still continues to be a serious problem in countries like Australia, New Zealand, Middle East, Africa India, South America, Turkey and Southern Europe (Arora et al., 2006). Various soft tissue sites involved by hydatid cysts and reported in literature include those of muscles and subcutaneous tissue (neck, chest, axilla, abdomen, thigh and palm) (Dirican et al., 2008; Bedioui et al., 2007).

In humans routine laboratory tests can only reveal eosinophilia. A number of serological tests can be done for screening, diagnosis and follow up for recurrence of hydatid disease. Highly sensitive tests include indirect haemagglutination and Latex agglutination test. Confirmation of diagnosis can be done by highly specific tests including immunoelectrophoresis, double diffusion test and ELISA and radioallergosorbent test (Xiao et al., 2005). Radiological imaging including USG, CT and MRI are excellent imaging modalities for hydatid cysts which can delineate exact site as well as identify the daughter cysts and hydatid sand which are specific to echinococcal infestation. MRI can also show a typical distinctive feature of cyst within cyst in case of the multicystic hydatid cyst (Chevalier et al., 1994).

So, fare some study on this subject has been done in one study by Horton (1999) study on Chemotherapy of Echinococcus infection in rat with albendazole was done and efficacy rate of this drug 46% reported. In other study by Keshmiri efficacy rate of trixil班班zolazo on treatment of hydatid cyst 39% reported. In study by Zagrinow on Chemotherapy of Echinococcus infection in rat with trixil班班zol-levamisole effect of these drugs on treatment of lung hydatid cyst 37%, liver hydatid cyst 41% and renal hydatid cyst 28% were determined. In study by Polat et al. (2009) on effect of albendazole and povidone iodine. For hydatid cysts protoscolices in vitro and vivo, the efficacy rate of albendazole 95% reported (Polat et al., 2009). Surgery remains the treatment of choice for hydatid cyst. Antihelminthic chemotherapy alone may be effective in 30-40% of patients. It is most effective in alveolar hydatid, less so for liver infections and essentially ineffective for the diseases of the bone, brain, eye and other sites. Hydatid cyst is best treated by complete excision of the cyst.

CONCLUSION

Result of present study indicated that administration of trixil班班zolazo-levamisole for hydatid cyst treatments is non sufficient in rats.

REFERENCES


