Ultrastructure Study of Hydatid Cyst Isolated from Sheep Exposure to Tendazol and Bendaziole

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Abstract

Cystic Echinococcosis is the most important zoonotic parasite with community health in addition to financial problem. This study was planned to detect a morphological structure of protoscolices of hydatid cysts that isolated from slaughtered sheep that exposure to Tinidazole and Bendaziole, and showed a different number and shape of hydatid cysts from different organs like; lungs and livers, with viability result of protoscolices. A clear be to found a hydatid sand and protoscolices distribution, and germinal layer without any treatment, all normal in shape and structure, but samples treated with drug Tinidazole and Bendaziole. It is a clear found distraction of protoscolices, and germinal layer of hydatid cyst in shape and structure. The current study explain some different between the liquid and germinal layer of cyst when sample treated with these drugs and other not treated in shape and morphological form of protoscolices.

Keywords: *Echinococcus granulosus, Hydatid cyst, SEM, Tinidazole and Bendaziole.*

Introduction

Hydatid cyst consider from one the most zoonotic parasite in the word with community health[1]. Pathogenicity of this parasite count on the location of the parasite in the organs and severity of infection, when occur burst of hydatid cysts some time leads to death due to bleeding and metastasis[2].In the beginning Echinococcosis develops as a liquid bladder via cyst wall, and protoscolices from germinal layer near cyst cavity[3], Cyst development of and protoscolices taken place in fertile[4].

Scanning electron microscopy is a type of electronic microscope used in the biomedical sciences,study the morphology and distinguish the surfaces of organs and tissues[5-6]. There are little studies using SEM to diagnosis and morphological details such as hooks and protoscolices[7]. Also There are some researches that described morphological shape of worm by using SEM[8]. In addition to study using SEM of hydatid cyst include the morphology of the protoscolices isolated from sheep in Libya[9].

In Egypt a study of hydatid cyst- isolated from tissue lesions in liver and lung of camels and sheep show structures of the protoscolices by scanning electron microscope were done by SEM[10].

The aim of this study was to detect a morphological structure of protoscolices of hydatid cysts that isolated from slaughtered sheep and exposure to Tinidazole and Bendaziole.

This study was planned to detect a morphological structure of protoscolices of hydatid cysts that isolated from slaughtered sheep that exposure to Tinidazole and Bendaziole, and showed a different number and shape of hydatid cysts from different organs like; lungs and livers, with viability result of protoscolices. A clear be to found a hydatid sand and protoscolices distribution, and germinal layer without any treatment, all normal in shape and structure, but samples treated with drug

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Materials and Method

Hydatid cysts collection: The hydatid cyst from animal samples (sheep) were collected from slaughter house and butcher after remove the cyst from infected organ.

Scanning Electron Microscope: The isolated cyst was washed three times with normal saline (0.9%) and then separated by using centrifuge then preserve the protoscolices by ethyl alcohol (70%).

Other sample treated with Tinidazole and Bendazioleaccording to[11], after that the samples were sent to Tehran University for scanning electron microscope which was done according to[12].

Viability of Protoscolices: The sediment of protoscolices were transferred to clean slid and then put one drop from eosin satin, moving circularly then examined under microscope according to the method[13].

Result

The current study showed a different number and shape of hydatid cysts that isolated from sheepfrom different organs like; lungs and livers (Fig. 1), and the viability result of protoscolices can be found in (Fig. 2).

In (Fig. 3) it clear be to found a hydatid sand and protoscolices distribution, and germinal layer without any treatment, all normal in shape and structure.

Fig. 1: Hydatid cyst isolated from sheep (A) lung (B) liver

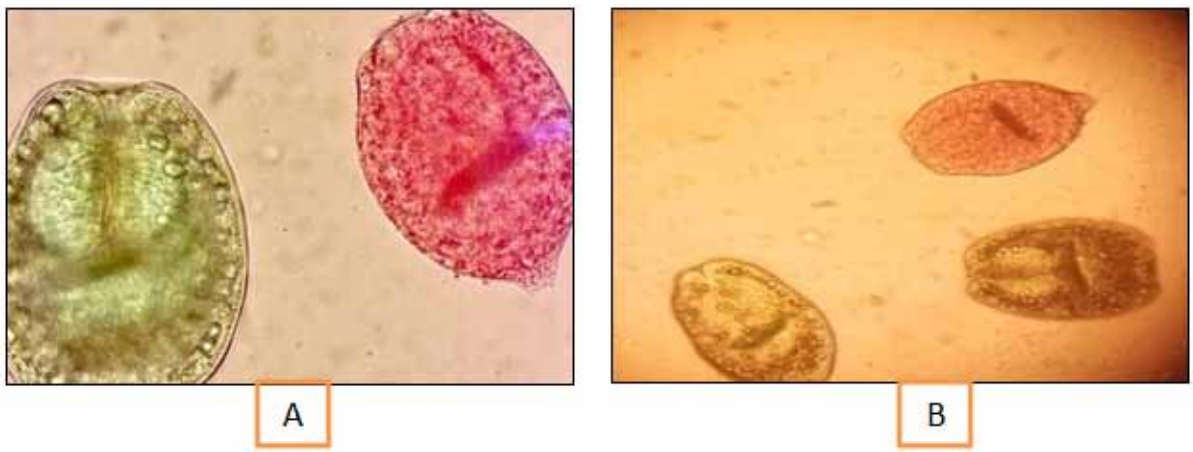

Fig. 2: Viability of protoscolices isolated from sheep; live (green) and dead (red) with eosin stain (A) (40x) and (B) (10x).

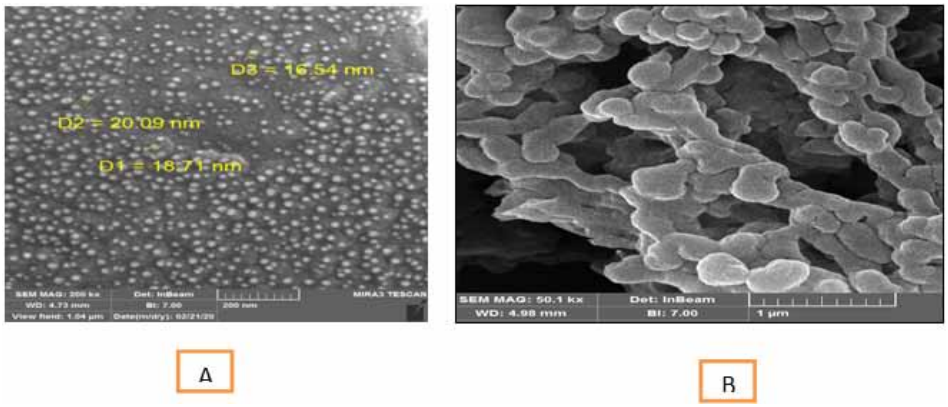

Fig. 3: Ultra structure with SEM of (A) hydatid sand with protoscolices (2oo X), (B) germinal layer with clear branches (500; 50 X) isolated from sheep without any treatment.

In (Fig. 4) it could be found a clear distraction of protoscolices in hydatid sand and germinal layer of hydatid cyst that treated with Tinidazole drug, while in (Fig. 5) a hydatid cyst treated with Bendaziole drug and a clear change in protoscolices and germinal layer with shape and structure.

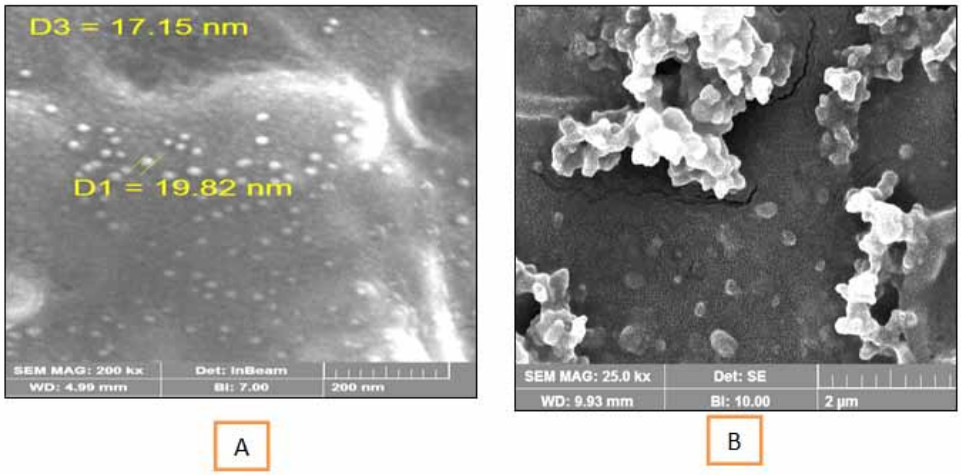

Fig. 4: Ultrastructure with SEM of (A) hydatid sand with protoscolices (2oo X), (B) germinal layer (500; 250 X) isolated from sheep treated with Tinidazole drug.

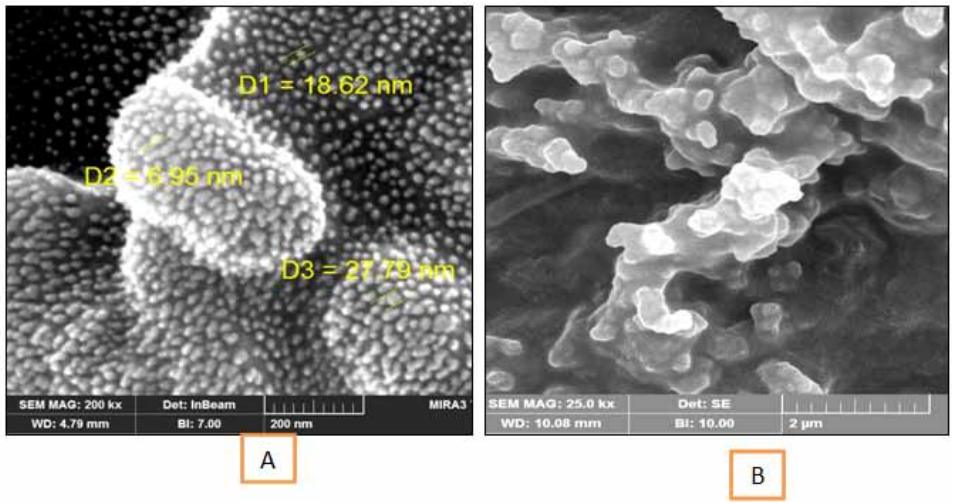

Fig. 5: Ultrastructure with SEM of (A) hydatid sand with protoscolices (2oo X), (B) germinal layer (500; 250 X) isolated from sheep treated with Bendaziole drug.

Discussion

The current study including ultrastructure study of hydatid cyst by Scanning electron microscope isolated from sheep as normal without any treated and some samples treated with drug Tinidazole and Bendaziole. It is a clear found distraction of protoscolices, and germinal layer of hydatid cyst that treated with Tinidazole drug and Bendaziole in shape and structure.

This study showed a different shape and size of cyst in liquid and germinal layer of each treatment that agreement with Elmajdoub et al (2014) [14] SEM use to examine the size, shape and hooks from different host.

In Egypt[10] study histopathological and the structures of the Protoscolesescamel by (SEM) showed invaginated of protoscolex and the capsule of cyst. The present study also show the effect of two drug Tinidazole and Bendaziole that used these drug in vitro in sheep effect in dead of protoscolices when add to liquid of hydatid cyst after 24h when used eosin stain and also Bendaziole drug of sheep was consider the second degree after Tinidazole to dead of protoscolices of sheep and show this changes in scanning microscope in liquid and germinal layer.

Also another study may be give some similarity with current study[15] that used Flubendazole drug in vivo in mice caused morphological changes in hydatid cyst treated with drug and also showed a similar ultra-structural changes in cysts recovered from the same drug the ultra-structural different see in the membrane of cysts recovered from Flubendazole treat animals. Another study about effect the drug on hydatid cyst by scanning microscope by Morris et al (1986)[16] showed that Praziquantel fastresult on the viability ofprotoscolices. SEM show breakin the tegument of cyst when treated parasite.

The great variability see in the therapeutic hit ofa benzimidazole anti helminthespossibly willexplain by the host immunological condition or the facial appearance of the cysts, as well as their size and location[17].

A number of studies also show using SEM such as other researcher [18-19]. They show fine details of immature invaginated and mature evaginated of protoscolices.

The current study explain some different between the liquid and germinal layer of cyst when sample treated with these drugs and other not treated in shape and morphological form of protoscolices.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both MOH and MOHSER in Iraq.

Conflict of Interest: None

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