

Occurance of hydratic cyst in camels (*Camelus dromedarius*) and their effect on meat quality

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Abstract

Hydatidosis is caused by *Echinococcus granulosus* which is one of the important parasitic disease in warm blooded vertebrates and occasionally in many other mammal species. There were not enough informations available regarding haematological profile, serum enzyme activity, chemical changes, and mineral profile in one humped camels (*Camelus dromedaries*) from Egypt with pulmonary hydatid cyst. The objective of the present study was to investigate the changes in complete haematological profile and also changes in some biochemical parameters in serum samples, such as; Total Protein, Albumin, Globulin, A/G ratio, serum liver enzyme activity such as; Alanine Amino Transaminase (ALT), Aspartate Amino Transferase (AST), bilirubin, glucose, cholesterol, also, kidney function activity as; Urea, Uric acid, and Creatinine, also, the level of complete Minerals profile, such as; Calcium, Inorganic phosphorus, Magnesium, Sodium, and Potassium were also done. Meat chemical composition of healthy and infected camels with *Echinococcus granulosus*, was also made as nutrition value, proteins, fats, ashes, mineral elements, as, calcium level in meat samples was measured and compared to samples from healthy camels at abattoir, a total of Fifty samples of meat, serum and hydatid cysts from lungs were collected from camels admitted to slaughter houses at Qalyubia Governorate, Egypt. Results concluding that; meat from the camel infected with echinococcosis is of poorer quality as compared with muscle tissue of the healthy animal as well as being biologically inferior, there were a significant increase in leucocytic count, neutrophils and eosinophils while the other haemograms are non significant. Moreover significant increase in total protein, and globulin in sera of infected camel with hydatidosis when compared with the non infected ones. Decreased in A/G ratio reflected the changes observed in albumin and globulin fractions. A significant elevation of the activity of AST, ALT and bilirubin level ($p < 0.05$), but a significant decrease in glucose value, and there is no alteration in serum cholesterol, urea, uric acid and creatinine level was observed. Concerning calcium and inorganic phosphorus levels, they were significant decrease, and this study showed non-

significantly changed in sodium, magnesium and potassium levels. On the other hand; in the present study, DNAs were extracted from protoscolices and/or associated germinal layers of hydatid cysts using a commercial kit. The (18 SSU r RNA gene) was used as targets for polymerase chain reaction (PCR) amplification. PCR products were purified and partial sequences were generated. Sequences were further examined by sequence analysis and subsequent phylogeny to compare these sequences to those from known strains of EG circulating globally. The phylogenetic analysis showed that 98% (n = 49) of the isolates clustered with *Echinococcus canadensis* genotype 6 (G6). Conclusions: It is clear that activity of the specific enzymes of serum and the haematological, chemical and biochemical profile can be helpful in diagnosis of pulmonary hydatid cyst infection of one humped camels.

Keywords: *Echinococcus granulosus*, (18SSUr-RNA gene), hematological, biochemical, Phylogenetic analysis, Egypt.

1-Introduction

Cystic echinococcosis is a zoonotic parasite belonging to the genus *Echinococcus* (Family Taeniidae). The final host is carnivores, and intermediate hosts include camels, sheep, goats, cattle, small rodent, wild herbivores and humans. This parasite might inhabit especially in liver and lung than other organs (e.g., kidneys, spleen, brain, bones, and heart) (**Bakır et al., 2012**). Hydatidosis is an economically important disease as it causes severe problems in different species animals especially in the industrial and semi-industrial cattle farms by close contact with the final host via domestic and wildlife reservoirs (**Umesh et al., 2010**). Echinococcosis can be accurately evaluated in Definitive Hosts and Intermediate Hosts (humans), respectively based on the patient's history, clinical findings, hematological serum, biochemical profiles and serological testing, (**Elshazly et al., 2009**). The liver is one of the essential organs and largest gland of the body (**Schmucker, 2005**), sensitive to different parasites and disease conditions which affect the total health state of the animal (**Ahmedullah et al., 2007**). The liver, which plays a serious role in lipid, carbohydrate and protein metabolism, performs tasks such as bile construction, vitamin storage and the biotransformation of drugs and toxins. In addition, the liver plays a role in immune functions (**Schmucker, 2005**). The hepatic enzymes such as Alanine Amino Transferase (ALT), Aspartate Amino Transferase (AST), serum glutamate-oxal-acetate transaminase (SGOT), and serum glutamate pyruvate transaminase (SGPT) are principal enzymes that primarily represent hepatocellular necrosis and cholestasis, respectively. So, there are of special usefulness in the diagnosis of serious hepatic diseases (**Kim et al., 2008**). It is clear that activity of the specific enzymes of serum in the infected serum of camels help to diagnosis of hydatid cyst. In farm animals, infested by hydatid cysts may not