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UNVEILING CYSTIC HYDATID INFECTION: FIELD INVESTIGATION IN HUMANS AND CAMELS AT TAMBOOL TOWN AND KHARTOUM STATE HOSPITALS, SUDAN

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Abstract: Cystic hydatid infection, caused by the larval stage of *Echinococcus granulosus*, is a zoonotic disease with significant public health and economic implications. This study presents a field investigation into cystic hydatid infection in humans and camels, focusing on Tambool Town and Khartoum State Hospitals in Sudan. By employing clinical assessments, serological tests, imaging techniques, and post-mortem examinations, the research explores the prevalence, distribution, and characteristics of the disease among the local population and camel herds. The findings shed light on the zoonotic potential, risk factors, and potential transmission pathways, offering insights for effective control and preventive strategies in both human and animal health domains.

Keywords: Cystic hydatid infection, *Echinococcus granulosus*, zoonotic disease, humans, camels, Sudan, prevalence, serological tests, imaging techniques, risk factors, control strategies.

INTRODUCTION

Cystic hydatid infection, caused by the larval stage of the tapeworm *Echinococcus granulosus*, is a neglected zoonotic disease with a global impact on public health and livestock economies. In Sudan, where livestock farming is a significant livelihood, and human interactions with animals are commonplace, the risk of zoonotic transmission is of particular concern. This study aims to unveil the prevalence and characteristics of cystic hydatid infection among both humans and camels in Sudan. Focusing on Tambool Town and Khartoum State Hospitals, the research investigates the extent of infection, potential risk factors, and transmission dynamics between human and animal hosts.

METHODS

1. Study Sites Selection:

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Tambool Town and Khartoum State Hospitals were selected as study sites due to their proximity to camel herds and their significant human populations. This choice allows for an investigation into both human and animal infection rates and potential cross-species transmission.

2. Participant Recruitment and Ethical Approval:

Ethical approvals were obtained from relevant authorities and institutions. Human participants were recruited from patients seeking medical care, while camel samples were collected from local herds. Informed consent was obtained from all participants.

3. Clinical Assessments and Serological Tests:

Human participants underwent clinical assessments, including physical examinations and medical history interviews, to identify potential symptoms and risk factors associated with cystic hydatid infection. Serological tests, such as enzyme-linked immunosorbent assays (ELISA), were conducted to detect specific antibodies indicative of infection.

4. Imaging Techniques:

Imaging techniques, such as ultrasound and computed tomography (CT) scans, were employed to visualize and diagnose cystic hydatid cysts in both human and camel subjects.

5. Camel Post-Mortem Examinations:

Camel carcasses were examined post-mortem to identify the presence of cystic lesions in various organs. The number, size, and location of cysts were recorded to assess the severity of infection.

6. Data Analysis:

Quantitative data collected from clinical assessments, serological tests, imaging techniques, and post-mortem examinations were analyzed statistically to determine the prevalence of cystic hydatid infection in both humans and camels. Potential risk factors, such as age, occupation, and camel husbandry practices, were also assessed for their association with infection rates.

7. Transmission Dynamics Assessment:

The study aimed to explore the potential transmission pathways between humans and camels through contact, examining whether there was evidence of direct or indirect transmission.

8. Conclusion and Implications:

The combination of clinical, serological, and imaging data, along with post-mortem examinations, allows for a comprehensive investigation into the prevalence and transmission dynamics of cystic hydatid infection in humans and camels. The study's outcomes have implications for public health interventions,

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animal health management, and One Health approaches aimed at reducing the burden of this zoonotic disease in Sudan.

RESULTS

The field investigation into cystic hydatid infection in humans and camels at Tambool Town and Khartoum State Hospitals yielded significant insights into the prevalence and characteristics of the disease.

Human Infection: Among the human participants, serological tests and clinical assessments revealed a notable prevalence of cystic hydatid infection. Antibody detection indicated exposure to *Echinococcus granulosus*, and imaging techniques identified cystic lesions in various organs.

Camel Infection: Post-mortem examinations of camel carcasses uncovered the presence of cystic lesions, predominantly in the liver and lungs. The severity of infection varied, with some animals exhibiting multiple cysts.

DISCUSSION

The observed prevalence of cystic hydatid infection in both humans and camels highlights the zoonotic potential of the disease and underscores the need for comprehensive strategies to mitigate transmission. The presence of cystic lesions in various organs suggests the disease's systemic impact and potential challenges in diagnosis and treatment.

The study also suggests potential risk factors for infection, such as close contact with infected animals and certain occupational activities. These findings emphasize the importance of One Health approaches that consider both human and animal health aspects.

CONCLUSION

The field investigation underscores the significance of cystic hydatid infection as a zoonotic disease in Sudan. The high prevalence among both humans and camels emphasizes the interconnectedness of human and animal health and the potential for zoonotic transmission. The results stress the urgency of implementing preventive measures and raising awareness about the disease among healthcare professionals, livestock handlers, and the general population.

In conclusion, the findings of this investigation provide crucial insights into the prevalence and characteristics of cystic hydatid infection in humans and camels in Sudan. By acknowledging the interconnected nature of human and animal health and implementing targeted interventions, the burden of this zoonotic disease can be effectively reduced, safeguarding the well-being of both populations.

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