CASE REPORT

Non-prevalence of the prevalent: Hydatid Cyst with Cyst wall Tuberculosis

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DOI : https://doi.org/10.47648/jmsr.2024.v3601.05

Abstract:

Echinococcosis (hydatid cyst), a parasitic infection, and tuberculosis (TB), a bacterial infection, are prevalent in Bangladesh, though their simultaneous presentation is exceedingly rare. This case report describes a unique instance of concurrent hydatid cyst and cyst wall tuberculosis. Specifically, we detail the clinical presentation, diagnostic findings, and management of a patient exhibiting both pathologies. This report underscores the importance of considering atypical presentations and coinfections, particularly in regions with high hydatid disease and TB endemicity. The co-occurrence of these two infectious diseases poses diagnostic and therapeutic challenges, necessitating a comprehensive approach to patient care.

Introduction:

Human hydatid disease, a significant zoonotic parasitic infection, results from the larval stage of Echinococcus granulosus, a dog tapeworm. While typically manifesting in the liver (50-70%), it can also involve the lungs, spleen, kidneys, bones, and brain. Concurrently, tuberculosis (TB), a globally prevalent bacterial infection and a significant public health concern, affects nearly a third of the world's population. The interplay between these two diseases is particularly intriguing. It is hypothesized that the immunomodulatory effects of hydatid cyst infection, potentially altering T-cell responses and cytokine profiles, may create a conducive environment for either the initiation or reactivation of latent TB infection[1]. Despite the high prevalence of both hydatid disease and TB in Bangladesh, their co-occurrence remains exceptionally rare, with limited to no documented cases in the national literature[2]. This scarcity raises questions about the true incidence of this co-infection and its potential clinical implications, particularly in resource-limited settings. Understanding the complex immunological interactions between these two diseases is crucial for optimal patient management and public health strategies, especially in endemic regions.

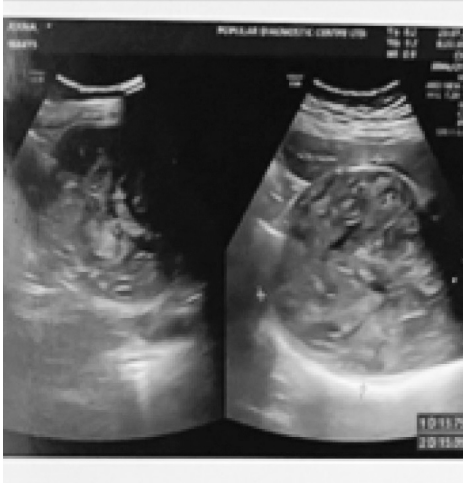
Given the overlapping endemicity of both diseases in Bangladesh, clinicians must maintain a high index of suspicion when encountering patients with cystic lesions and chronic respiratory or constitutional symptoms. The rarity of documented co-infections could stem from underreporting, misdiagnosis, or the difficulty in distinguishing hydatid disease from TB-related granulomatous lesions on imaging. The potential impact of hydatid cyst rupture, which can trigger hypersensitivity reactions and secondary infections, further complicates the clinical picture. A more systematic approach to studying this rare co-occurrence, including more extensive epidemiological studies and immunological investigations, is warranted to understand better its prevalence, diagnostic challenges, and therapeutic implications in endemic regions.

Case:

A 42-year-old female presented with diffuse abdominal pain and progressive abdominal distension for one month. On examination, a tender swelling was palpated in the right hypochondrium, eliciting deep tenderness.

Ultrasonography (USG) of the abdomen revealed a large cystic lesion with internal components and a detached membrane within the right lobe of the liver. The largest cyst measured approximately 15.5 × 13.0 cm. High-resolution computed tomography (HRCT) confirmed a well-capsulated cyst in the liver on its right lobe, measuring 12.0 × 11.5 cm, with internal daughter cysts—findings suggestive of hepatic hydatid disease.

Laboratory investigations showed elevated D-dimer and C-reactive protein (CRP) levels, indicating an ongoing inflammatory or infectious process. Given the patient's persistent pain and the considerable size of the cyst, surgical intervention was deemed necessary.



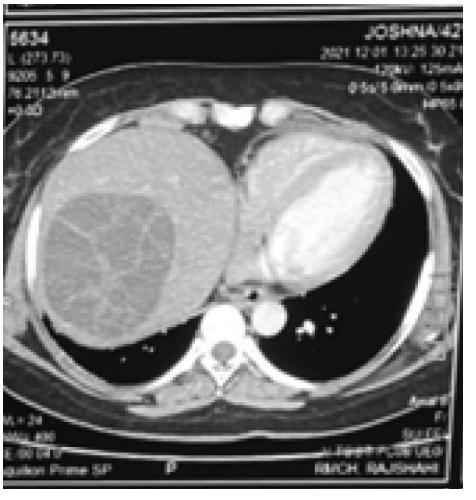
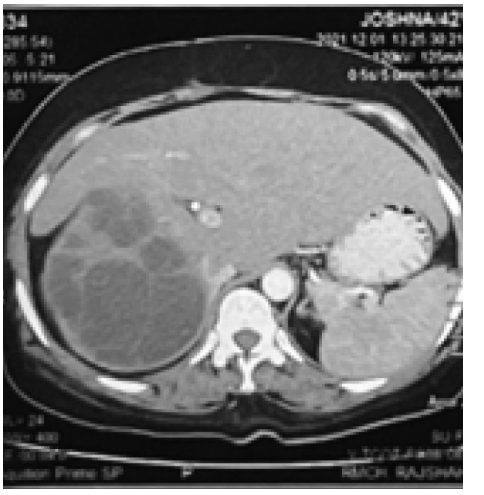


Fig. 1: USG shows a large hydatid. Fig. 2 & 3: HRCT of the abdomen shows a capsulated cystic lesion cyst involving the right lobe of the liver with an internal daughter cyst in the right lobe.



The procedure that was done in this case was "Exploratory laparotomy followed by evacuation of cyst and deroofing."The cyst wall was sent for biopsy, and the report showed there was granulomatous inflammation, which was suggestive of tuberculosis. After the operation, the patient's condition improved to a much greater extent. Her entire stay in the hospital was uneventful. The patient was prescribed Albendazole therapy for 2 months and anti-tubercular treatment for 6 months, and she is now under regular follow-up.

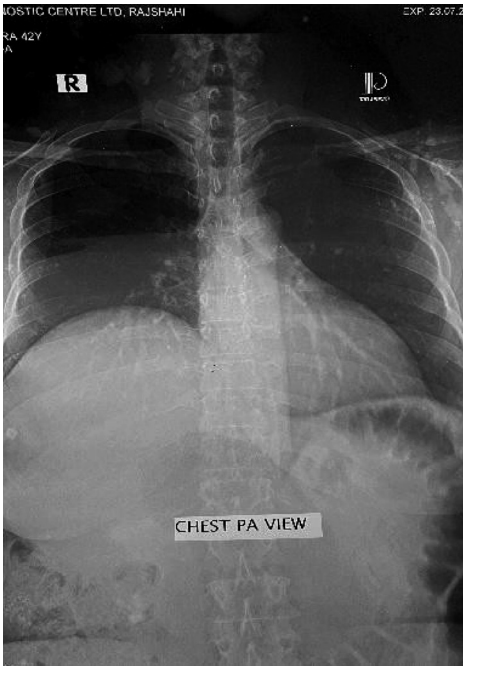


Fig. 3: Chest X-ray shows no abnormality. Fig. 4: Post-operative materials containing Multiple Daughter Cysts

Discussion:

Tuberculosis has always been one of the most common infectious diseases globally, especially in the subcontinent. Along with tuberculosis, many other co-infections have been reported. Hydatid cyst is one such infection, but the prevalence of hydatid cyst & cyst wall tuberculosis is rarely reported in our country. The coexistence of Hydatid Cyst & Cyst wall tuberculosis is still a sporadic case in the whole world. A literature search showed nothing specific about this coexistence[3]. The Echinococcus parasite mainly causes hydatid cysts. The definitive host is Dog. Men are the incidental hosts[4], and they acquire it by close contamination with dogs or by eating raw vegetables contaminated with ova of the worm. The most common site of this disease is the liver, followed by the lungs. Poor hygiene and low socioeconomic status significantly affect acquiring both diseases[5]. Typically, hydatid cysts in the liver remain asymptomatic. However, it may present with a lump in the liver, some abdominal pain, and other complications such as obstructive jaundice, portal hypertension, or even rupture of the cyst, which may lead to anaphylactic shock. In the case mentioned above, during screening smears of the cyst wall, there was a collection of epithelioid cells, histiocytes, and giant cells. It also revealed granulation tissue infiltrated by acute and chronic inflammatory cells and fibrosis. All this evidence leads to tuberculosis in the cyst wall[6].

In this case, the patient showed no other clinical, biochemical, or pathological evidence of having pulmonary tuberculosis. Typically, treating hydatid cyst disease starts with giving Albendazole (400mg twice daily for 3 months)and is often combined with PAIR7(percutaneous puncture, aspiration, injection of scolicidal agent, and re-aspiration)[7]. In our case, great care was taken during the operation to avoid spillage, and cavities were sterilized with 0.5% silver nitrate or 2.7% sodium chloride. Also, after reaching diagnosis, simultaneous treatment of both diseases was given. The patient reported no significant adverse effects after the treatment. The main goal of our discussion was to highlight the importance of suspicion of concurrence of both diseases, Tuberculosis and Hydatid cysts, where they are endemic. A multimodular approach should be taken for a clinical, serological, and microbiological correlation diagnosis in a similar case scenario[8].

The presence of elevated inflammatory mediators, such as D-dimer and CRP, raises an important consideration regarding potential co-infections or secondary complications, including bacterial superinfection or an underlying granulomatous disease like tuberculosis. Given that hydatid disease can modulate immune responses through immune evasion mechanisms, it is conceivable that such infections might alter the host's susceptibility to concurrent infections, including TB[9]. Moreover, differentiating hydatid cysts from tuberculous hepatic lesions remains a diagnostic challenge in endemic regions, as both can present with cystic or necrotic components on imaging[10]. This case underscores the significance of a multidisciplinary approach in endemic settings, integrating imaging, serology, and microbiological studies to ensure accurate diagnosis and optimal management.

Conclusion:

Despite the high prevalence of both hydatid disease and tuberculosis (TB) in endemic regions like Bangladesh, their co-occurrence remains strikingly rare, raising essential questions about host-pathogen interactions and diagnostic challenges. This case, involving a sizeable hepatic hydatid cyst with elevated inflammatory markers, underscores the complexity of distinguishing hydatid disease from TB-related granulomatous lesions. While cyst wall tuberculosis was not confirmed, the possibility of immune modulation by Echinococcus granulosus altering susceptibility to TB cannot be overlooked. The paradoxical non-prevalence of this co-infection may stem from immune evasion mechanisms, misdiagnosis, or underreporting, highlighting the need for further research into the interplay between these two infections. A multidisciplinary approach integrating imaging, serology, and microbiology remains crucial for accurate diagnosis and optimal management in endemic regions.

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