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Letter to the Editor

A Rare Clinical Puzzle to Be Solved: Pulmonary Hydatid Cysts in Kidney Transplant Recipients

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Dear Editor-in-Chief

Hydatid disease, caused by tapeworms of the genus *Echinococcus*, is a parasitic infection that primarily affects the liver and lungs. Although rare in kidney transplant recipients, pulmonary hydatid cysts pose significant challenges due to immunosuppression and the potential for severe complications. Here, we discuss the clinical implications, diagnostic challenges, management strategies, and preventive measures for hydatid disease in this population, supported by a representative case (1).

Echinococcosis is a zoonotic disease transmitted through ingestion of *Echinococcus* eggs from contaminated food or water. The liver is the most commonly affected organ (70–85% of cases), followed by the lungs (20%), with renal echinococcosis accounting for approximately 2% of cases. In endemic regions like Iran, hydatid disease remains a public health concern. Kidney transplantation, a life-saving procedure for end-stage renal disease (ESRD), increases susceptibility to infections, including parasitic ones, due to lifelong immunosuppression. Studies suggest that immunosuppressive agents, such as mycophenolate mofetil, may reduce antibody production, potentially impairing control of larval growth. Additionally, corticosteroids have been shown to increase *Echinococcus* cyst size in murine models during early infection, indicating a role for cellular immunity in limiting larval proliferation (2). A 32-year-old male kidney transplant recipient from rural Iran presented 18 months post-transplantation with a 3-month history of mild cough, fever, and vague flank pain. Imag-

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ing revealed a 6 cm pulmonary hydatid cyst in the right lower lobe and a 4 cm renal cyst in the native kidney. Hydatiduria, indicated by white membranes in urine, confirmed renal cyst rupture. IgG ELISA serology was positive (titer >1:160), and contrast-enhanced CT showed internal septations and calcifications in both cysts. The patient was managed with albendazole and surgical resection, with no recurrence at 12-month follow-up (3).

Clinical presentation of pulmonary hydatid cysts in transplant recipients varies from asymptomatic to severe, depending on cyst size, location, and rupture status. Symptoms may include cough, fever, or chest pain, while renal involvement may present with flank pain or hydatiduria, a rare but definitive sign of cyst rupture. Radiological evaluation, including ultrasonography (USG) and contrast-enhanced CT, is critical for diagnosis, with plain chest radiography revealing homogeneous or heart-shaped opacities in pulmonary cases. The diagnostic challenge is heightened in immunocompromised patients, as parasitic infections are often overlooked in favor of more common bacterial or viral etiologies during post-transplant febrile illnesses (4).

Management typically involves a combination of medical and surgical approaches, complicated by immunosuppression. Albendazole (10–15 mg/kg/day) is the cornerstone of medical therapy but may not achieve complete resolution, as seen in the case above, necessitating surgical intervention. Surgical options for pulmonary cysts include cystotomy and capitonnage, while renal cysts may require nephrectomy in severe cases. Techniques like puncture, aspiration, injection, and re-aspiration (PAIR) are less effective in complex or ruptured cysts. Bilateral pulmonary cysts pose unique anesthetic challenges, often requiring single-lung ventilation with a double-lumen tube. Complications, such as secondary infections (*e.g., Aspergillus* co-infection, reported in 5–10% of complicated hydatid cases in immunocompromised patients), significantly worsen prognosis and require targeted anti-fungal therapy alongside cyst management (5). Recurrence, reported in up to 10% of cases, necessitates long-term follow-up and a multidisciplinary approach involving infectious disease specialists, transplant surgeons, and radiologists (5).

In endemic areas, transplant programs should implement screening protocols, including pre-transplant serology and imaging for high-risk patients (e.g., those with rural exposure or a history of animal contact). Patient education on avoiding *Echinococcus* exposure—such as proper hand hygiene, avoiding unwashed produce, and minimizing contact with stray dogs—is critical. Post-transplant monitoring with periodic USG in endemic regions can facilitate early detection (6).

Pulmonary hydatid cysts in kidney transplant recipients are a rare but serious complication, exacerbated by immunosuppression. While indirect evidence links immunosuppressive agents to enhanced cyst growth, direct evidence is limited. Future research should focus on longitudinal studies in transplant cohorts from endemic areas to quantify risk and evaluate screening efficacy. I propose developing clinical guidelines for pre-transplant screening (e.g., IgG ELISA and USG in high-risk patients) and post-transplant monitoring to reduce morbidity. A high index of suspicion, combined with multidisciplinary management, is essential to optimize outcomes and prevent recurrence in this vulnerable population.

Conflict of Interest

The authors declare that there is no conflict of interests.

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