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Obstructive Jaundice Due to Hydatid Cyst: Case Report

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Abstract: Hydatid cyst is a parasitic disease caused by *Echinococcus granulosus*, common in endemic regions and characterized by the development of cysts in the liver or lungs. This report describes the case of a 25-year-old patient from a rural area in southern Brazil who presented with obstructive jaundice caused by a large hepatic hydatid cyst. The diagnosis was confirmed through imaging exams (MR cholangiography) and serology. Treatment consisted of albendazole administration followed by successful surgical excision of the cyst, with no complications. The patient showed positive progress and was discharged on the tenth postoperative day. This case underscores the importance of early diagnosis and proper management of hydatidosis, as well as the need for control strategies in endemic areas.

Keywords: Echinococcosis; Hydatid Cyst; Jaundice.

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1. Introduction

Hydatid cyst is a form of progression of the parasitic disease known as Echinococcosis or Human Hydatidosis, an endemic pathology in several countries, including the southern region of Brazil [1, 2]. Rural areas with livestock such as sheep and cattle, where dogs coexist closely with humans and farm animals, present a higher risk of transmission. Transmission occurs when humans (accidental hosts) ingest food or water contaminated by parasite eggs from infected dog feces or through direct contact with infected dogs (definitive hosts).

Echinococcosis has a prevalence of 1 to 10 cases per 100,000 inhabitants in endemic areas, making diagnosis challenging due to the disease's slow and asymptomatic progression. This also contributes to a high mortality rate, especially in areas with inadequate sanitation control, where access to or seeking medical care is limited, leading to complications such as cyst rupture and anaphylaxis [1, 2].

Hydatid cysts typically have late-onset symptoms due to the slow growth of the cysts, although a minority may cause symptoms and are rarely associated with severe morbidity and mortality [3, 4]. Mass effects caused by the cysts can produce various symptoms: cholestasis, portal hypertension, Budd-Chiari syndrome; the cysts may also rupture into the peritoneum, causing peritonitis, fistulas, or pulmonary hydatidosis [4, 5]. Diagnosis is challenging due to the rarity of the disease and the broad range of differential diagnoses in symptomatic cases. Diagnosis is generally made through imaging techniques combined with serology. Asymptomatic patients may benefit from screening with both, provided they live in endemic areas [5, 6]. Ultrasound, magnetic resonance imaging (MRI), or computed tomography (CT) are the primary imaging methods for diagnosis,

with MRI and CT being the most useful for identifying precise locations, the number of cysts, and anatomical details that can aid and guide treatment [5].

Once the diagnosis is well established, medical treatment should begin to reduce parasitic proliferation and stabilize the clinical condition. However, in some cases, medical treatment alone is ineffective, requiring adjunctive therapy with surgery, particularly for cysts in advanced stages or with diameters greater than 5 centimeters. Surgical procedures must be performed carefully to avoid new foci of infection and ensure the complete removal of all material [4-7]. Patients suffering from this disease should have regular outpatient follow-ups due to the possibility of local or distant recurrences [7].

In summary, Echinococcosis is a global zoonosis with a significant impact on rural and agricultural areas, as demonstrated in this case. Effective prevention and control depend on integrated public health measures. Understanding its epidemiology, diagnosis, and treatment is crucial for effective disease control. Therefore, this work represents a form of effort in research, surveillance, and education necessary to reduce the burden of cystic echinococcosis and improve the quality of life for affected populations. It also presents a case report of the disease from diagnostic suspicion to outpatient follow-up after surgery, contributing to the scientific community by facilitating the understanding of the disease and its therapeutic management [1-4].

2. Case Report

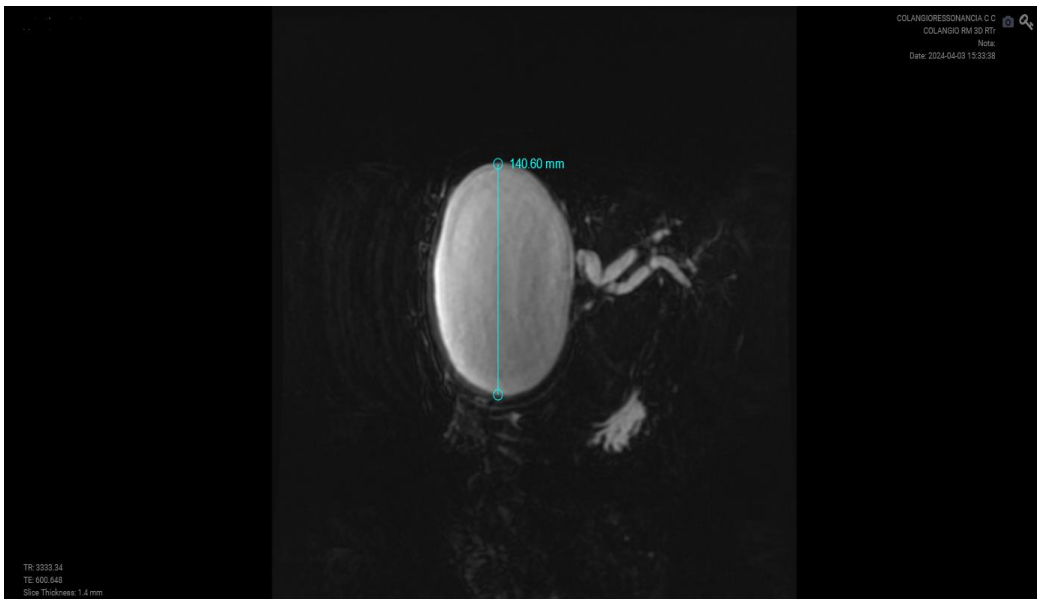
A 25-year-old male patient of mixed race, from Arroio Grande – RS, a rural endemic area, previously healthy, presented with progressive jaundice. Initially, diagnostic investigation was performed in his hometown, with an abdominal ultrasound that revealed a large cystic image in the right hepatic lobe on its visceral surface, likely compressing the hepatic hilum, with mildly dilated intrahepatic bile ducts. The hepatic cyst measured 13.3 x 11.9 x 12.5 cm, with a volume of 1,035 cm^3, and the ultrasound findings were compatible with a hydatid cyst. Further diagnostic workup was recommended, including a computed tomography (CT) scan, which demonstrated a large cystic lesion in the liver with an expansive effect, causing compression of the bile ducts, resulting in bile duct dilation and posterior displacement of the portal vein, confirming the presence of a hydatid cyst. However, the patient did not follow up with medical care.

After three months of symptom progression, the patient began experiencing associated symptoms such as epigastric pain, involuntary weight loss, dark urine (choluria), pruritus, and vomiting, prompting him to seek medical attention again. He was then transferred to the hospital for treatment. During hospitalization, magnetic resonance cholangiopancreatography (MRCP) (Figure 1) confirmed a large unilocular cystic formation in the liver near the hilum, measuring approximately 140 x 100 mm, with a pronounced compressive effect on the bile ducts in the hilar region, causing significant upstream bile duct dilation. Hemagglutination serology for total antibodies against Echinococcus was also requested, with a positive result at a titer of 1:640.

After the diagnosis was confirmed, albendazole was prescribed, and surgical intervention was planned. Following preoperative preparation, the hydatid cyst was excised, with abdominal cavity protection and isolation of the cyst using moist compresses containing hypertonic solution. Intraoperatively, a 20% sodium chloride solution was injected into the cystic capsule, and after 6 minutes of action, the cystic fluid was aspirated, and the cystic capsule was removed (Figure 2). The specimen was sent for histopathological analysis. The procedure was completed without complications.

Postoperatively, the patient showed satisfactory clinical and laboratory improvement and was discharged on the 10th postoperative day, without complaints. He was instructed to continue albendazole treatment for another three months and undergo serial monitoring of liver and canalicular enzyme levels.

Figure 1. Magnetic Resonance Cholangiography showing a large unilocular cystic formation located in the right lobe of the liver, measuring approximately 140 x 100 mm. The image demonstrates a significant compressive effect on the bile ducts, particularly in the hepatic hilum region, resulting in marked upstream bile duct dilation. This finding is consistent with a hydatid cyst, contributing to the patient's obstructive jaundice. The image was crucial for surgical planning, allowing for the precise delineation of the lesion and its relationship with vital hepatic structures.



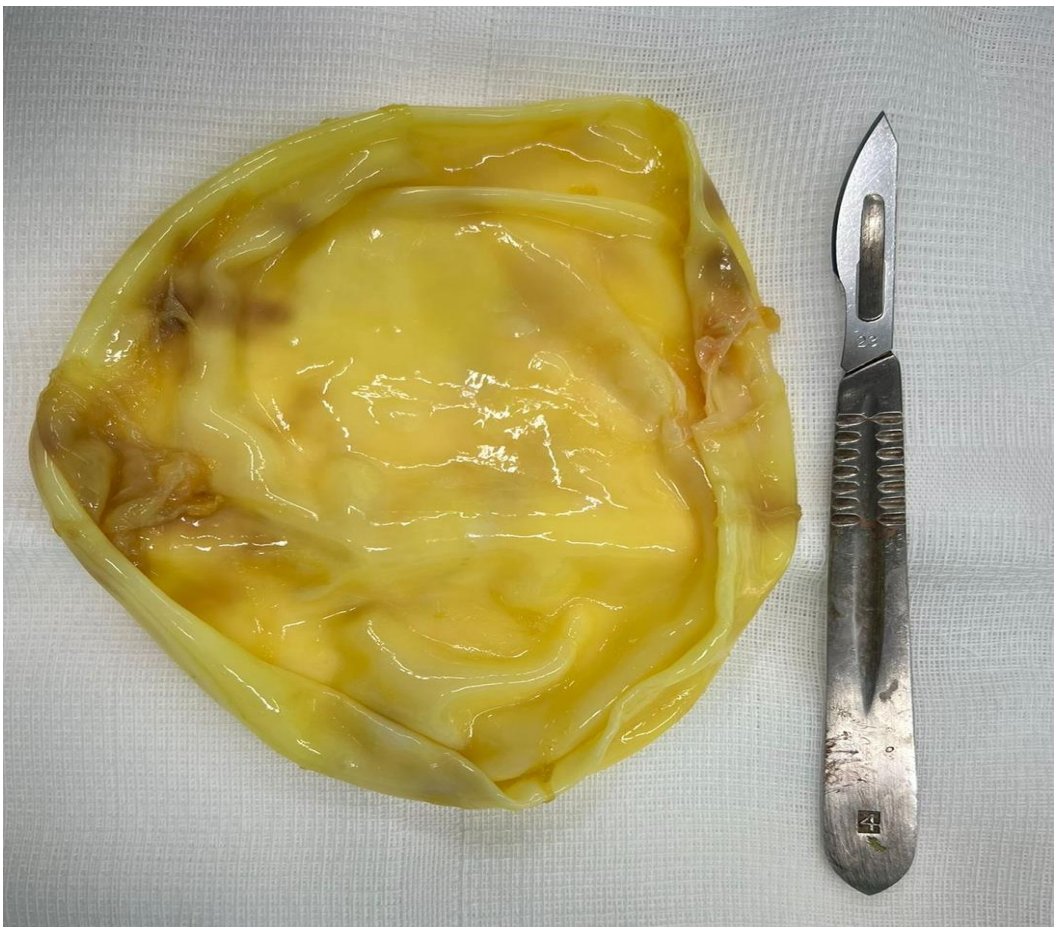
The case described outlines a severe form of hepatic echinococcosis, in which the location of the hydatid cyst in the liver causes significant compression on the bile ducts, leading to obstructive jaundice. The underlying pathophysiology involves the expansive effect of the cyst, which, as it grows, compresses adjacent hepatic structures, particularly the bile ducts, resulting in bile flow obstruction. This bile duct obstruction leads to a clinical picture of cholestasis, with classic symptoms such as jaundice, dark urine (choluria), pale stools (acholia), and pruritus. Delayed diagnosis and treatment can lead to severe outcomes, including worsening liver function, secondary biliary cirrhosis, or even liver failure.

According to the analysis of clinical findings and the pathophysiological progression, the bile duct dilation identified in the MR cholangiography indicates the severity of the condition and the need for urgent intervention, as prolonged obstruction can lead to complications such as cholangitis or liver failure. Moreover, the positive serological diagnosis for Echinococcus confirms the parasitic etiology and justifies early antiparasitic therapy with albendazole to prevent systemic larval dissemination, which could result in anaphylaxis or the involvement of other organs during the surgical manipulation for cyst capsule excision and bile duct decompression.

3. Discussion

The hydatid cyst is a form of progression of the parasitic disease known as Echinococcosis or Human Hydatidosis, an endemic pathology in several countries, including the southern region of Brazil [8, 9]. The parasite's life cycle involves two main hosts: the definitive hosts, which are dogs and other canids, and the intermediate hosts, which are sheep, cattle, and occasionally humans. Therefore, in areas where sheep and cattle farming is common, the risk of contamination is higher, as humans become accidentally infected by ingesting parasite eggs present in food, water, or soil contaminated by the feces of infected dogs.

Figure 2. Surgical Specimen removed during the excision of the hydatid cyst. The image shows the cyst capsule after aspiration of the liquid content and treatment with 20% sodium chloride solution, used to inactivate the parasite larvae and prevent dissemination. The surgical procedure was performed with isolation of the abdominal cavity to avoid leakage of cyst contents and minimize the risk of anaphylaxis. The cyst capsule was sent for histopathological analysis, confirming the parasitic nature of the cyst. The excision was successfully completed without intraoperative complications. For comparison purposes, the scalpel beside it measures 13 centimeters in length.



Echinococcosis is caused by the larval form of the tapeworm *Echinococcus granulosus* [6, 8] and is characterized by the development of cysts of varying sizes, most located in the liver and lungs, where hydatid cysts form, although other organs can also be affected [13-16]. These cysts may grow slowly, reaching large sizes and containing thousands of small larvae. Symptoms vary depending on the location, size, and number of cysts. Generally, the entire process of dissemination and proliferation is asymptomatic, with clinical manifestations appearing only when the affected organ is significantly compromised. The main clinical signs are related to the most common sites of cyst formation. In the liver, which accounts for 70% of cases, patients may experience abdominal pain, a palpable mass, hepatomegaly, and jaundice. In the lungs, the second most common site, symptoms may include cough, hemoptysis, chest pain, and dyspnea. However, in cases of cyst rupture, whether spontaneous or during surgical manipulation, the condition may progress to fever, urticaria, and potentially life-threatening complications such as a severe anaphylactic reaction [17].

It is important to remember that in the context of obstructive jaundice, the initial differential diagnosis includes a wide range of conditions, such as cholangiocarcinoma, choledocholithiasis, chronic pancreatitis, and other causes of extrinsic biliary compression. Differentiation between these conditions and hydatid cyst is achieved through imaging studies and specific serological tests. Therefore, making a diagnosis requires a combination of clinical, laboratory, imaging, and patient history, especially in endemic areas, which is crucial. Among laboratory tests, serological assays such as ELISA and indirect hemagglutination are the most recommended for detecting antibodies against the parasite. Imaging exams are essential for visualizing the cysts and defining their characteristics, with ultrasound, computed tomography (CT), and magnetic resonance imaging (MRI) being the most indicated. Another confirmatory test is molecular biology using the surgical specimen.

In the case described, clinical suspicion arose due to the patient's origin in an endemic region for echinococcosis, and abdominal ultrasound revealed a cystic image. While the ultrasound could not differentiate all possible etiologies, it is the first test performed to assess the biliary system due to its low cost, wide availability, and ability to identify structural changes, ruling out certain differential diagnoses. CT scanning revealed a lobulated intrahepatic cystic mass with hilar compression and associated bile duct dilation, strongly suggesting a hydatid cyst. Confirmation was obtained through serology for antibodies against Echinococcus. Magnetic resonance cholangiography further contributed to surgical planning by precisely delineating the relationship between the cyst and the biliary structures.

Recently, the combination of imaging methods with molecular techniques and advanced immunological tests has improved the diagnosis of hydatid cysts. The use of PCR for direct identification of parasite DNA from biological samples is increasingly being incorporated, offering greater diagnostic specificity and sensitivity. For treatment, the recommended approach is a combination of benzimidazole compounds (albendazole and mebendazole) and cautious surgery. The surgical procedure involves puncturing the cyst, emptying it, and injecting scolicidal substances to paralyze the larvae and reduce the risk of anaphylaxis. In cases where the cyst is inoperable, albendazole treatment is used, and for patients with portal hypertension and liver failure, liver transplantation may be indicated [4]. Minimally invasive approaches, such as ultrasound-guided percutaneous drainage with scolicidal injection, are being explored as alternatives to open surgery in selected cases. The administration of antiparasitic agents, such as albendazole, in conjunction with these techniques has proven effective in preventing recurrence.

This case highlights the importance of controlling human hydatidosis, particularly in endemic areas. Echinococcosis is a neglected zoonosis that still presents significant challenges, not only in diagnosis but also in control in rural regions where the parasite's life cycle is perpetuated through interactions between dogs, sheep, and humans. Public health programs focused on hygiene education, domestic animal control, and regular deworming of dogs in rural areas are essential for reducing incidence. Additionally, raising awareness for early diagnosis in endemic areas can decrease morbidity and the need for invasive surgical interventions, directly impacting the burden on the healthcare system. Epidemiological surveillance is crucial for detecting outbreaks and planning long-term preventive strategies.

Thus, for the improvement of public health and zoonosis control, preventive measures are extremely important. These include hygienic practices such as handwashing, especially after contact with dogs, sheep, and cattle and before handling food; sanitary control of slaughtered animals, monitoring their epidemiological status to identify problem areas and support the planning and evaluation of control measures; diagnosis and treatment with anthelmintics for dogs in endemic areas, under veterinary guidance; and in areas where the disease occurs, avoiding contact between children and the feces of these animals [3].

4. Conclusion

This case report highlights the importance of early diagnosis and proper management of hydatid cysts in endemic regions such as southern Brazil, where the disease represents a significant public health challenge. Rapid identification and effective treatment are crucial to prevent severe complications, such as cyst rupture and potentially fatal anaphylactic reactions. The surgical approach, combined with antiparasitic therapies such as albendazole, proved to be effective in this case, leading to the patient's full recovery. This experience reinforces the need for a well-defined clinical protocol for the detection and treatment of hydatid cysts, considering recent advances in imaging techniques and less invasive interventions.

From a public health perspective, this case underlines the importance of preventive measures such as zoonosis control, education on hygienic practices, and awareness campaigns in rural areas where the disease is most prevalent. Increased epidemiological surveillance can also help reduce the incidence of new cases. Furthermore, in endemic areas, the use of Praziquantel in infected dogs, vaccination of sheep, and preventing contact between the two have become appropriate preventive measures. Lastly, more research is needed to improve therapeutic options, especially for inoperable or complicated cysts, and to develop better prevention and control strategies for vulnerable populations.

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