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A Cystic Scare Case Report: A Rare Case of Hydatid Disease on a 41-Year-Old Male

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Abstract

Echinococcosis or hydatidosis or hydatid disease is the most frequent cause of liver cysts in the world. The prevalence of hydatid cyst in humans appears to be directly related to a low level of sanitation. The disease is prominent in rural areas with poor housing conditions, where humans, dogs and cattle exist in close proximity. This paper presents a case of a 41-year-old, Filipino, male, no known co morbidities, business man and with history of previous travels abroad who presented with fever and watery, non-bloody, non-mucoid stool. No other associated symptoms such as cough, colds, abdominal pain, chest pain and dysuria. Upon consult, patient was initially managed as a case of Infectious Diarrhea.

Imaging techniques are essential for diagnosis, with the relatively inexpensive and portable Ultrasound (US) widely used to diagnose CE or AE liver lesions; X-ray is used for lung cysts in which were also done to the patient.

Medical therapy of hydatidosis has been tried with many drugs including benzimidazole carbamate group. Mebendazole was the first drug to be used for hydatid disease. Albendazole given preoperatively in dose of 10 mg/kg/day for 1 month causes sterilization of the hepatic hydatid cyst, killing most of the protoscolices. Surgical procedure was not indicated for the patient since the size of the cysts were to small and medical treatment was more beneficial for the patient.

Introduction

Echinococcosis is a zoonosis caused by cestodes of the genus Echinococcus (family Taeniidae). Considerable advances have been made in the 21st century on the genetics, genomics, and molecular epidemiology of the causative parasites, on diagnostic tools, and on treatment techniques and control strategies, including the development and deployment of vaccines [1,2]. Currently there is no alternative drug to albendazole to treat echinococcosis, and new compounds are required urgently.

CE is cosmopolitan and more common, although a few island countries have declared elimination. In areas of endemicity, the annual CE incidence ranges from 1 to 200 per 100,000, whereas that of AE ranges from 0.03 to 1.2 per 100,000. Mortality in untreated or inadequately treated AE patients is 90% within 10 to 15 years of diagnosis. The CE mortality rate (2% to 4%) is lower but may increase considerably if inadequate care management is provided.

For the clinical features of echinococcosis, In CE these are associated with damage or dysfunction of target organs, particularly the liver (70%) and lungs (20%), with the remainder including the brain, spleen, kidney, and heart. Almost all primary AE lesions are in the liver. Clinically, most AE and CE patients present late at clinics or hospitals.

Case Presentation

This is a case of a 41-year-old, Filipino, male, no known co morbidities, business man and with history of previous travels abroad who presented with fever and watery, non-bloody, non-mucoid stool. No other associated symptoms such as cough, colds, abdominal pain, chest pain and dysuria. Upon consult, patient was initially managed as a case of Infectious Diarrhea and was given Esomeprazole, Azithromycin, Serrapeptase and Livervitan.

Upon admission at the ward, physical examination showed non pruritic, erythematous sclera

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Table 1: Complete Blood count.

Complete Blood Count	Normal Value	July 19, 2022	July 20, 2022	July 21, 2022	July 23, 2022	July 26, 2022	July 31, 2022	Aug 1, 2022
White Blood Cells	**5–11**	13.28	7.24	6.98	10.79	11.1	6.69	7.87
Red Blood Cells	**M 4.6–6.2; F 4.2–5.4**	4.87	4.72	4.62	4.49	4.68	4.19	4.09
Hemoglobin	**M 13.5–18; F 12.0–16.0**	15.14	14.1	13.8	13.4	14.3	12.7	12
Hematocrit	**M 40–54; F 38–47**	40.7	39.7	38.9	38.6	41.7	37.1	35.6
MCV	**80–100**	83.6	84.1	84.2	86	89.1	88.5	87
MCH	**27–33**	31	29.9	29.9	29.8	30.6	30.3	29.3
MCHC	**31–36**	37.1	35.5	35.5	34.7	34.3	34.2	33.7
RDW – CV	**11–16**	12.7	13.3	12.9	13.6	13.7	13.6	13.8
RDW – SD	**37–54**	38.9	41.2	39.8	42.2	44.3	43.8	43.4
Platelet	**150–400**	41	49	96	198	319	237	239
Differential Count								
Neutrophil	**0.55–0.77**	0.84	0.73	0.73	0.86	0.88	0.87	0.86
Lymphocyte	**0.27–0.33**	0.06	0.15	0.15	0.07	0.06	0.07	0.07
Monocyte	**0–0.12**	0.1	0.12	0.12	0.07	0.06	0.06	0.06
Eosinophils	**0–0.07**							0.01
Basophils	**0.01–0.05**							
Impression:		Leukocytosis with thrombo-cytopenia	Thrombo-cytopenia	Thrombo-cytopenia				

Table 2: Prothrombin and thromboplastin time.

Prothrombin Time	Normal Value	Normal Value
Patient	**09-13**	12.5
Control	**9.5-13.7**	10.6
% activity	**70–120**	81.2
INR	**≤ 1.2**	1.19
Partial Thromboplastin Time		
Patient	**30–43**	
Control	**26.3–41.1**	

Bleeding Time	Normal value
	2–8 minutes
Clotting Time	**Normal value**
	5–10 minutes

BLOOD TYPING	"A" positive

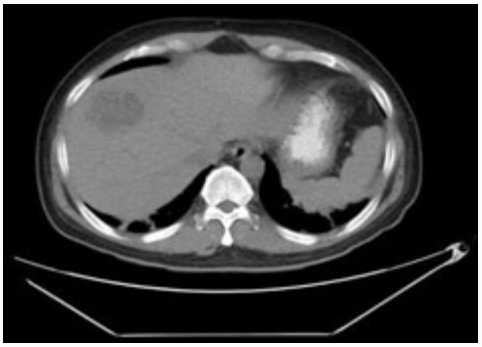

Figure 1: Chest CT scan: bilateral variable size lung nodules, some cavitating, some showing mixed solid and cystic densities and cluster of variable size nodules and fibrotic densities seen in the posterobasal segments of bilateral lower lobes and liver findings of Mild hepatomegaly with a cluster of multivesicular cysts. Primary consideration is Hydatid disease.

of the right eye, no neck vein distention, with clear breath sounds, normal heart rate, regular rhythm, soft abdomen, no edema on extremities. Placed on soft diet and hydration was continued.

Diagnostic tests and imaging were requested and done such as chest X-ray which revealed Pneumonia. Complete blood count revealed leukocytosis with thrombocytopenia, Dengue panel showed negative results, Urinalysis showed bacteriuria and proteinuria. Hyponatremia and hypokalemia were noted and correction of electrolytes was done accordingly. Patient was also referred to Pulmonology, Hematology and Infectious disease, Ophthalmology services for co-management. Initial antibiotic treatments were shifted such as Ceftriaxone to Piperacillin- Tazobactam and Azithromycin to Levofloxacin. Hydration was also increased to 120 cc/h. Chest CT scan was done revealing bilateral variable size lung nodules, some cavitating, some showing mixed solid and cystic densities and cluster of variable size nodules and fibrotic densities seen in the posterobasal segments of bilateral lower lobes and liver findings of mild hepatomegaly with a cluster of multivesicular cysts. Primary consideration at that time was Hydatid disease. Other laboratory and imaging workups were done and as follows (Tables 1-3 and Figure 1):

Discussion

Hydatidosis is a zoonotic infection caused by *Echinococcus granulosus*. China with a prevalence rate of 5% to 10%. Humans are considered accidental intermediate hosts and are infected through ingestion of tapeworm eggs in contaminated food, water or soil or direct contact with the definitive animal hosts (i.e., dogs). Hydatid cysts developed frequently in the liver (80–90%), most commonly the right lobe (50–70%) as the larvae (Metacestodes) released penetrates the intestines and spreads hematogenously. Because of its slow growth, patients may be asymptomatic for years until these cysts

Table 3: Blood Chemistry.

Blood Chemistry	Normal Value	July 19, 2022	July 20, 2022	July 21, 2022	July 23, 2022	July 26, 2022	July 31, 2022	Aug 1, 2022
Na	137.00–145.00	132.1						
K	3.50–5.10	3.1		2.8			2.9(L)	2.9(L)
BUN	9.00–20.00	16.9						
Creatinine	0.80–1.50	1.3		1.0				
iCa	1.1–1.4	1.02						
Mg	1.60–2.30	2.4(H)						
BUA	3.50–8.50							
SGOT	17.00–59.00	133.9(H)	87(H)					
SGPT	21.00–72.00						35.7	35.7
RBS	0.00–0.00	111						
FBS	75.00–110.00		122(H)					
CA 19-9								
Albumin					2.3(L)	3.5		
Alk Phos					140(H)			
HbA1c	1.00–6.1% Good control: <7.0% Bad control: >8.0%			5.40%				
Total Cholesterol	0.00–200.00		214(H)					
Triglyceride	0.00–150.00		316(H)					
HDL	40.00–60.00		17(L)					
LDL	0.00–150.00		133.8					
VLDL	0.00–40.22		63.2(H)					
Procalcitonin		49.66			1.18			<0.05
Total Bilirubin			2.7(H)					
Direct Bilirubin			1.6(H)					
Indirect Bilirubin			1.1					
Amylase			59					
Lipase			145					

enlarge and cause compressive symptoms. The innermost germinal layer of the cyst generates brood capsules and protoscoleces into a central cavity filled with a clear "hydatid fluid" [3].

For the diagnosis of Echinococcus, imaging techniques are essential for diagnosis, with the relatively inexpensive and portable Ultrasound (US) widely used to diagnose CE or AE liver lesions; X-ray is used for lung cysts. The challenge in imaging diagnosis of echinococcosis is detecting small cysts/lesions (2 cm in diameter). Contrast-Enhanced Ultrasonography (CEUS) may be used for detecting small AE lesions and differentiating them from abscesses and tumors based on pulsating blood flow imaging. Color and pulsed doppler US, dual-energy CT or spectral CT, and diffusion-weighted Magnetic Resonance Imaging (MRI) might also be useful in detecting blood supply and the metabolism of lesions. In CE, MRI appears to be of better diagnostic value than CT scanning (100), and both procedures are complementary for AE and should be performed to provide sufficient information for therapeutic decision making. However, MRI T2-weighted microcystic images are pathognomonic of AE lesions. In correlation with the case, Whole abdominal CT scan was done to our patient where bilateral variable size lung nodules, some cavitating, some showing mixed solid and cystic densities and cluster of variable size nodules and fibrotic densities seen in the posterobasal segments of bilateral lower lobes and liver findings of Mild hepatomegaly with a cluster of multivesicular cysts were seen (Figure 1) [4-7].

The sensitivities and specificities of serological tests for CE and AE have been comprehensively reviewed. Hydatid Fluid (HF) is the major antigenic source for echinococcosis immunodiagnosis, with the HF lipoproteins Antigen B (AgB) and antigen 5 widely used in serological assays for CE. However, in the Philippine settings, these serologic tests are currently not available.

There are various acceptable treatment approaches which are based on the recent WHO classification of hydatid disease mainly medical treatment with anti-helminthics (albendazole, praziquantel, or ivermectin), percutaneous aspiration, excision or even watchful waiting. However, it is less clear for disseminated peritoneal hydatidosis. Medical therapy of hydatidosis has been tried with many drugs including benzimidazole carbamate group. Mebendazole was the first drug to be used for hydatid disease. Later on, albendazole was introduced with better absorption properties. Albendazole given preoperatively in dose of 10 mg/kg/day for 1 month causes sterilization of the hepatic hydatid cyst, killing most of the protoscolices. Although surgical excision of all visible cysts is most preferred, some have advocated inactivation of liver protoscoleces within the cyst before excision by washing with 20% hypertonic saline as a scolicidal agent. Neoadjuvant anti-helminthic therapy has also been recommended

consisting of 2 to 3 weeks of albendazole treatment prior to the contemplated procedure followed by 6 to 8 weeks more after surgery. The surgical approach, however, will depend on the number, size and location of the cysts, nature of complications and previous surgery.

Conclusion

In this case, we conclude that imaging studies are essential in diagnosing Echinococcus also depending on the patient's presentation. For this patient, the imaging result did not show the water-lily sign indicates a cyst with a floating, undulating membrane, caused by a detached endocyst. Treatment of Albendazole to our patient showed improvement and clearing of the hepatic nodules. However, monitoring of liver enzymes should be made because Albendazole are hepatotoxic. Complete history including eating habits and travel history are important as well as the thorough physical examination must be done in order to come up with an accurate diagnosis.

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