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An Unusual Case of Tamponade

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Abstract
Leptospirosis is a zoonosis of ubiquitous distribution, caused by infection with pathogenic *Leptospira* species. The spectrum of human disease caused by leptospires is extremely wide, ranging from subclinical infection to a severe syndrome of multiorgan infection with high mortality.[(1)]Cardiovascular implication in leptospirosis is infrequent we Report a 39 year old farmer who had jaundice ,abdominal pain, vomiting along with dry cough ,breathlessness, oliguria and massive pericardial effusion following a short febrile illness which required mechanical ventilation and renal replacement therapy. His diagnostic workup revealed leptospirosis and workup for TB was negative. The patient presented a good response to the treatment, being discharged from hospital completely asymptomatic, with no pericardial effusion.He was evaluated again one month later, with no trace of effusions or symptoms.

Keywords Pericardial effusion ,Tamponade, Leptospirosis

Introduction

Leptospirosis is a globally important zoonotic disease whose apparent reemergence is illustrated by recent outbreaks on virtually all continents. The disease is caused by pathogenic Leptospira species .Recreational exposure and domestic-animal contact are prominent sources of leptospirosis and is characterized by a broad spectrum of clinical manifestations, varying from asymptomatic infection to fulminant, fatal disease. [(1)] Leptospirosis usually does not affect the heart or its associated structures. Here ,We present the cardiac tamponade case secondary to leptospirosis in a young farmer.

Case report

A 39-year-old male, farmer by profession came to emergency in September month with the complain of dry cough, breathlessness on exertion, bilateral lower limb swelling with muscleache and reduced urine output since 4 days, abdominal pain ,vomiting,Headache,yellow discolouration of eyes since 14 days. Patient was giving history of fever with chills on and off 10 days back.Patient had no history of any comorbidities or any medication use in past.

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On examination, patient was febrile 100.4 F ,pulse rate was 110 bpm, respiratory rate 26 cycles/ minute and Blood Pressure was 70/60 mm of Hg, patient was conscious and oriented to time place and person,GCS is 15/15 ,on cardiovascular examination heart sounds were muffled and on respiratory examination there were bilateral crepitations, additionally mild pallor ,icterus, bilateral pedal oedema and raised JVP was also present.

On analysis ,Patient's haemoglobin and platelets were low, leucocytosis with neutrophilia.liver function test and real function test were deranged.Inflammatory markers were raised, PT INR were deranged, urine routine microscopy was positive for bile pigment,protein and RBC.

As per the clinical features and laboratory findings infection with Leptospira was suspected and patient was empirically started on Inj.ceftriaxone 2gm IV BD and with supportive treatment like Renal replacement therapy and non-invasive ventilation.Inj.vitamin K and one point PCV was given.

The electrocardiogram showed sinus tachycardia 100 bpm with low voltage of QRS complexes and electrical alternans.

Chest x-ray was suggestive of cardiomegaly with bilateral mild pleural effusion.

USG Abdomen and Pelvis showed Grade 2 fatty liver with mild ascites and mild bilateral pleural effusion.

HRCT Thorax showed Loculated pericardial effusion into lateral and base of heart 442cc volume with Anterolateral extension and 120 cc with posteroinferior extension), this two appear to be in continuity with which each other and causing mass effect on heart with bilateral minimal pleural effusion ,no significant abnormalities noted in bilateral lung fields.

The Trasthorasicechocardiogram showed Massive pericardial effusion compressing right atrium and right ventricle,with floating internal echoes,LVEF: 35-40%,Mild Concentric LVH with Grade 1 diastolic dysfunction. After this diagnosis of tamponade was made and the patient was immediately transferred to Cath lab and a subxiphoid pericardiocentesis was successfully performed and pericardial pigtail was put by cardiologist, obtaining a drainage of 750 cc of hematic content with floating debris in it.After which heart rate ,blood pressure and respiratory rate were gradually come down to normal and finally the patient become haemodynamically stable in 2 day.

Analysis of pericardial fluid cytology showed Leukocytosis with neutrophil predominance(70%) ADA 101.16, LDH 8581, pericardial fluid culture sensitivity,Malignant cell and CBNAAT (sent twice) .Both times CBNAAT came negative.

the first results for serology were available, positive ELISA immunoglobulin IgM antibodies to *Leptospira* sp.(1.76). Dengue,Rapid malarial test, Blood and urine culture,HIV, HBsAg and Autoimmunity test were sent but No other significant positive results were obtained.

Patient fulfilled several clinical criteria and presumptive laboratory criteria for leptospirosis, additionally modified fain's score (A+B+C) was calculated achieving 33 points on it,thus final diagnosis of leptospirosis was made. Antibiotic therapy with doxycycline 100 mg BD was initiated according to this diagnosis.

After Two weeks repeat 2D-ECHO was done which showed practically no pericardial effusion and LVEF-55% ,Mild Concentric LVH with Grade 1 diastolic dysfunction.

After 2 cycles of haemodialysis and two weeks of antibiotics gradually patient's condition started improving and in the end patient was completely asymptomatic with no residual effusions. Patient was discharged after complete antibiotic therapy and normalisation of laboratory parameters.
30 days later the patient was followed up again and he was totally asymptomatic and without a trace of effusion.

Table 1:Laboratory parameters

Investigation	Value	Investigation	Value
Haemoglobin	9.8	Leptospira IgM	+ (1.57)
Total leucocyte count	28,200	HIV/HCV/ HBsAg	Non-reactive
Neutrophils	23,124	RMT	Non-reactive
Platelets	1,10,000	Dengue	Non-reactive
Total bilirubin	7.69		
SGOT	761	Pericardial fluid Cytology	
SGPT	1859	• TLC	1200
Total protein	5.58	• Neutrophils	70%
Albumin	2.58	• ADA	101
Urea	216	• LDH	8581
Creatinin	7.68	• Protein	4.7
CRP	224	• Glucose	13
LDH	135	• RBC	Many
Procalcitonin	5.86	• P.Fluid culture/sensitivity	No Growth
PT/INR	32/2.81	• P.Fluid Malignant cells	Negative
Trop I	117.80	• P.Fluid	Negative

		CBNAAT	
Thyroid function test	Normal	Covid RTPCR	Negative
		ANA IF	Negative
Urine analysis			
• protein	2+		
• Bile Pigment	2+		
• RBC	15-20		
• Pus cell	10-12		

Discussion

Leptospirosis is a widespread and prevalent zoonotic disease with protean manifestations caused by pathogenic spirochetes of the genus *Leptospira*. Humans are infected incidentally after animal or environmental exposure. The clinical course of leptospirosis is variable. Most cases are mild and selflimited , while some are severe and potentially fatal.The illness generally presents with fever, headache, and myalgia, following an incubation period of average 10 days.[1,2,3]

Laboratory findings like the presence of anemia, neutrophilic leukocytosis, and thrombocytopenia ,elevation of bilirubin or transaminases are common.The presence of hematuria and albuminuria in urine analysis are also frequent. Deranged renal function test are usually seen too.[3,5]

Diagnosis of leptospirosis is based on exposure history combined with clinical and laboratory criteria.

According to WHO , the human cases of leptospirosis can be reported as

- Suspected diagnosis: presence of clinical description compatible with leptospirosis and a positive presumptive diagnosis test (ELISA , latex agglutination test).
- Confirmed diagnosis: suspicious cases that shows a positive confirmatory diagnosis test (PCR, MAT, positive cultures)[3,4,5]

Aggressive supportive care for leptospirosis is essential and can be life-saving. Patients with nonoliguric renal dysfunction require aggressive fluid and electrolyte resuscitation to prevent dehydration and precipitation of oliguric renal failure. Hemodialysis should be provided to patients with oliguric renal failure. Rapid initiation of hemodialysis has been shown to reduce mortality risk and typically is necessary only for short periods.[6]

It is difficult to differentiate between tubercular effusion and bacteria effusion as they both may occasionally show similar neutrophil predominance and high ADA levels .some studies (

LDH/ADA ratio) are available to discriminate between two in case of plural effusion [7,8]but not in case of pericardial effusion.

To rule out tubercular etiology in a prevalent country like India in such cases become very difficult. In this patient despite raised ADA levels,we we could rule out TB as the patient tuberculosis work up was negative(twice) and later patient responded to leptospirosis treatment and never relapsed.

Conclusion

Cardiac tamponade is a very rare presentation of leptospirosis.The successful management of this patient requires a high index of suspicious, prompt evaluation and appropriate therapy.Although cardiac tamponade secondary to leptospirosis is very rare should always be considered in a patient presenting clinical description compatible with leptospirosis. In a hope of spreading the knowledge ,We report this rare case of almost undiagnosed cardiac affection caused by *Leptospira.*

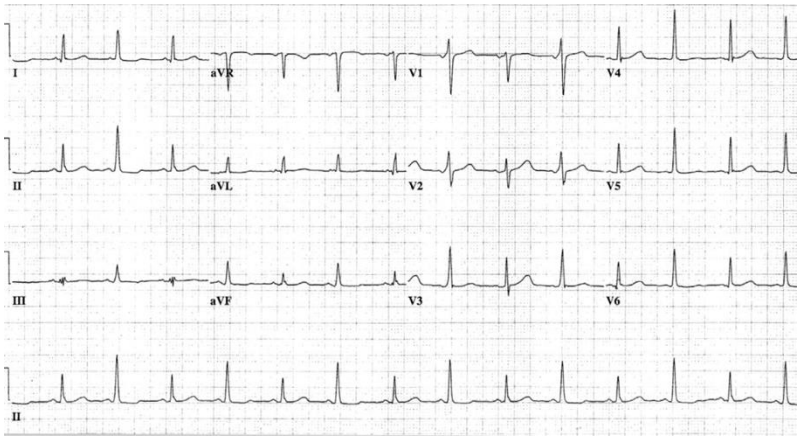

Figure-1 ECG findings: Sinus rhythm with electrical alternans, suggesting of cardiac tamponade.

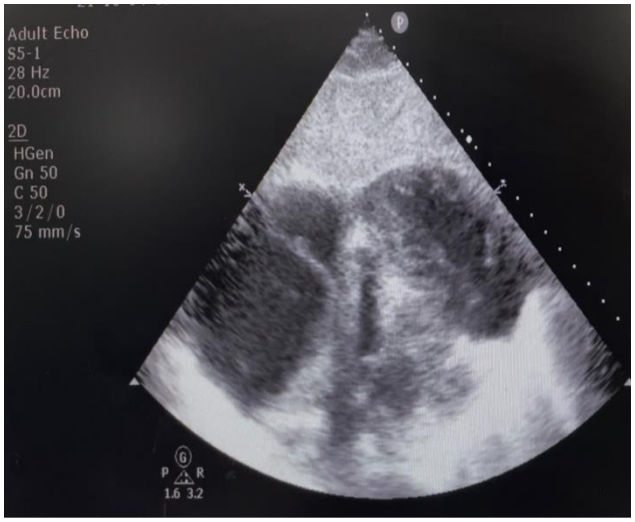

Figure-2 Echocardiographic findings: showing massive pericardial effusion with floating internal echos and severe diastolic collapse of right-atrium and right-ventricle.

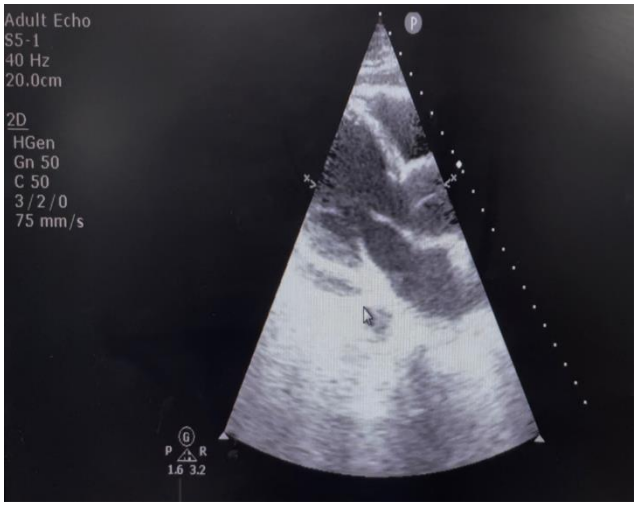

Figure-3 Post therapeutic pericardiocentesis echocardiographic findings : minimal residual pericardial effusion.

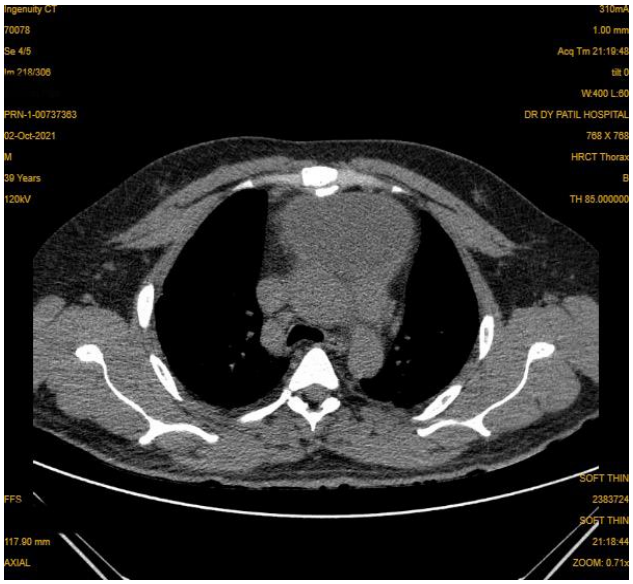

Figure-4 HRCT thorax findings: Axial section of soft tissue window showing Loculated pericardial effusion into lateral and base of heart causing mass effect on heart.

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