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A RARE CASE OF FULMINANT HEPATITIS DUE TO LEPTOSPIROSIS IN A BOY IN HIS TEENS IN TRIPURA : CASE REPORT

Medical Biochemistry

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ABSTRACT

Fulminant hepatitis (FH) is a rare and devastating syndrome caused by a variety of hepatic insults. It is characterized by severe metabolic derangements, neurologic complications and ultimately, multiorgan failure. The pathogenesis includes both direct and immune-mediated liver injury triggered by diverse aetiologies. Leptospirosis is an infection caused by Leptospira. Leptospirosis causes disease in humans mainly in developing countries. Clinical presentation of Leptospirosis is unclear and can vary from flu-like febrile illness to rapidly fatal infection. Typically present with fever, headache, myalgia. Severe forms, like meningitis, pulmonary hemorrhage, Weil's syndrome with jaundice, and acute kidney injury are also there. It has been reported in few instances that Leptospirosis can cause Fulminant Hepatitis. A Male patient in his early Teens, Hindu by religion from Rural area of Tripura admitted with yellowish discoloration of both eyes, Pain Abdomen, Altered sensorium with history of Fever. Final Diagnosis was made as Fulminant Hepatitis due to Leptospirosis. Finding a case of leptospirosis in a non endemic state of Tripura is very significant. The patient has High Total Leucocyte count, Hypokalemia & Proteinuria, High ALP level & Tyrosine needles in urine which supports the diagnosis.

KEYWORDS

Fulminant hepatitis, Leptospirosis, Weil's syndrome, Jaundice, rare case, non endemic, Tyrosine needles

INTRODUCTION

Fulminant hepatitis (FH) is a rare and devastating syndrome caused by a variety of hepatic insults. It is characterized by severe metabolic derangements, neurologic complications and ultimately, multiorgan failure. The pathogenesis includes both direct and immune-mediated liver injury triggered by diverse aetiologies. despite recent therapeutic advances, is associated with significant morbidity and mortality. Prior to transplantation, most series suggested a less than 15% survival in patients with FH.[1] Leptospirosis is an infection caused by *Leptospira*. Leptospirosis causes disease in humans mainly in developing countries and also in living areas with poor housing and sanitation, due to animals (mainly rats) that are potential sources of contamination. The clinical manifestations and the severity of leptospirosis are highly variable. [2]The clinical presentation of Leptospirosis is unclear and can vary from flu-like febrile illness to rapidly fatal infection. Typically present with fever, headache, and myalgia but symptoms of any organ may be apparent [3] Severe forms, like meningitis, pulmonary hemorrhage, Weil's syndrome with jaundice, and acute kidney injury, are presented in only 10% of reported cases [4] The differential diagnosis is difficult due to the overlap of its clinical presentations that can mimic other infectious (dengue, influenza, malaria, enteric fever, toxoplasmosis, hepatitis, etc.) or auto-immune diseases.[5] It has been reported in few instances that Leptospirosis can cause Fulminant Hepatitis.

METHODOLOGY

Blood samples were collected by Venepuncture for testing of Biochemical parameters. Biochemical tests were done by Full Automated Biochemistry Analyzer XL 640 by Erba & Serum electrolytes by ISE Method by Easylite analyzer. Other tests like Complete Blood Count, Urine Analysis & Antibody titre for Hepatitis A, E & Leptospira are also done by ECLIA & Immunoassay technique.

Case Report

A Male patient in his early Teens, Hindu by religion from Rural area of Tripura admitted with Yellowish discoloration of both eyes, Pain Abdomen & Altered sensorium with history of Fever. On examination Patient had Icterus, Irritable, Disoriented & responding to commands occasionally, PR: 86, BP: 90/60 mmHg, RR: 28/min, SpO2: 98% in Room Air, Chest: Bilateral Clear, CVS: S1&S2+ & Abdomen Soft, GCS: E2V4M3.

The Biochemical, Hematology & Serology Reports are given below:

29/10/23

Test Name	Result	Reference range
Blood Urea	36	Upto 50
Sr. Creatinine	1.0	Upto 1.5
Sr. Anti-HCV	NEGATIVE	-
Sr. HBsAg	NEGATIVE	-
HIV	NEGATIVE	-
APTT	74.6	22-38 sec
PT	23.4	10-14 sec
INR	2.10	0.83-1.35

LFT			
	29/10/2023	30/10/2023	Reference Range
Total Bilirubin	19.07	24.13	0.2 - 1.2 mg/dL
Conj. Bilirubin	7.9	11.05	0 - 0.30 mg/dL
Unconj. Bilirubin	11.17	13.08	0.2 - 1.0 mg/dL
SGOT (AST)	119	155.6	Upto 40 IU/L
SGPT (ALT)	100	120	Upto 40 IU/L
GGT	99	103	3 - 22 IU/L
ALP	420	433	54 - 369 IU/L
Total Protein	6.0	6.26	6 - 8 gm/dL
Albumin	2.3	2.10	3 - 5 gm/dL
Globulin	3.70	4.16	2 - 4 gm/dL
A:G Ratio	0.62	0.50	0.9 - 2.5

Electrolytes			
	29/10/2023	30/10/2023	Reference Range
Sr. Sodium	135	139	135-142 mmol/L
Sr. Potassium	2.5	2.9	3.5-5.5 mmol/L

30/10/23

Hepatitis A Antibody (Anti HAV) IgM (ECLIA):

	Results	Units	Bio. Ref. Interval
HAV-IgM Index Value	0.24	Index	<1.00

Hepatitis E Antibody (Anti HEV) IgM (Enzyme Immunoassay):

	Results	Units	Bio. Ref. Interval
HEV-IgM Index Value	0.43	Index	<1.00

Leptospira Antibody IgM(Enzyme Immunoassay):

	Results	Units	Bio. Ref. Interval
Leptospira Antibody IgM	2.59	Index	<0.9

CBC		
Test	Result	Reference Range
Hemoglobin (Hb%)	8.0	13-17 gm/dL
Total Leukocyte Count	15000	4000-11000 cells/cu. mm
Total RBC Count	2.85	4.5-5.5 million/ cu. mm
Platelet Count	1.53	1.5-4.5 lakh/cu. mm
Hematocrit	23.4	40-50 %
MCV	82.11	80-99 fL
MCH	28.07	27-32 pg
MCHC	34.19	32-36 g/dL
RDW-CV	15.1	11-14%
RDW-SD	50.4	39-45 fL

DLC	
Neutrophils	58%
Lymphocytes	34%
Monocytes	05%
Eosinophils	03%

USG Report:
1. Acute hepatitis
2. Ascites

Urine RE: (29/10/2023)
Colour: Light Brown
Appearance: **Hazy**
Deposit: **Present (+)**
Specific Gravity: 1.015
pH: 6.5
Sugar: Absent
Protein: **Present (++)**
Ketone bodies: Absent
Pus cell: **15-20 /HPF**
RBC: **3-4 /HPF**
Epithelial cells: **3-4/HPF**
Casts: Absent
Crystals: Absent
Yeast cells: Absent
Bacteria: **A Few**
Others: **Tyrosine Needles**
Malaria Parasite QBC Assay: Negative

DISCUSSION

Final Diagnosis was made as Fulminant Hepatitis due to Leptospirosis. It is caused by *Leptospira,* a pathogenic spirochete, and human infection occurs after exposure to environmental sources, mainly animal urine, contaminated water or soil, or infected animal tissue.[4] Our patient is also from a village where sanitation & Housing is not proper. It is a disease usually reported in low-income countries of tropical regions and in developed countries travel related leptospirosis is considered a significant source of infection.[5] Our patient belongs to Low socio-economic strata which supports the diagnosis but did not have any history of Travelling to endemic area. Endemic states of Leptospirosis in India are Gujarat, Kerala, Tamil Nadu, Maharashtra, Karnataka & UT of Andaman & Nicobar Islands.[6] Finding a case of leptospirosis in a non endemic state of Tripura is very significant. Leptospirosis spread through the urine of infected animals (Pigs, Horses, Dogs, Rodents, Wild animals), through water & soil.[7] In Tripura in the Village areas Piggeries can be found very often which supports the diagnosis of Leptospirosis. The patient has history of birth through Vaginal Delivery (Home delivery) & No history of immunization till the day of hospitalization. The patient has High Total Leucocyte count which supports the diagnosis. The patient showed Hypokalemia & Proteinuria which supports the diagnosis.[8] Patient showed High ALP level & Tyrosine needles in urine which supports the diagnosis.

CONCLUSION

The case was diagnosed as Fulminant Hepatitis due to Leptospirosis. Severe complications of this condition can lead to high morbidity & mortality. Leptospirosis in this region is rare & hence Diagnostician & Clinician should be suspicious enough to consider Leptospirosis as a precursor for Fulminant Hepatitis as the symptoms & findings of this condition are variable & confusing & can mimic other infections or auto-immune disorders & can progress with fast clinical deterioration. Early Diagnosis & proper Treatment is important to decrease morbidity & mortality.

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