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ACUTE PANCREATITIS AS A COMPLICATION OF LEPTOSPIROSIS: A RARE CASE REPORT

General Medicine

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ABSTRACT

Leptospirosis is a widespread zoonotic infection caused by Leptospira species, with a broad clinical spectrum ranging from mild flu-like illness to severe multi-organ dysfunction. While hepatic and renal involvement are common, pancreatic involvement is rare and often under-recognized. We report the case of a 44-year-old male from Mumbai who presented with high-grade fever, jaundice, vomiting, and epigastric pain and was diagnosed with leptospirosis on serology with pancreatitis on abdominal ultrasonography. This case underscores the importance of recognizing acute pancreatitis as a rare but significant complication of leptospirosis. Timely diagnosis and supportive management can lead to favorable outcomes, especially in endemic areas.

KEYWORDS

Leptospirosis, Acute Pancreatitis, Weil's disease

INTRODUCTION

Leptospirosis, also referred to as Weil's disease, is a globally prevalent zoonotic infection caused by pathogenic spirochetes of the genus Leptospira. It is transmitted primarily through direct or indirect exposure to the urine of infected animals. Rodents, especially rats, are the most important reservoir followed by dogs, cattle, pigs etc[1]. The most common route of entry for the pathogen is through skin breaches such as cuts or abrasions. Less frequently, infection may occur via contact with the conjunctiva, mucous membranes, or through sexual transmission[2]. According to WHO, globally, leptospirosis causes approximately 1.03 million human cases each year, resulting in around 58,900 deaths. The highest rates are found in Southeast Asia and Oceania within the Asia-Pacific[2}. Although often underreported, the incidence in tropical climates, which includes much of India is roughly 10 times higher than in temperate regions, estimated at 10+ cases per 100,000 population annually. In India, States & UT with high incidence of leptospirosis include-Kerala, Tamil Nadu, Karnataka, Andaman & Nicobar, Andhra Pradesh, Maharashtra, Odisha, Goa, Gujarat & West Bengal. The disease frequently emerges as outbreaks following heavy rainfall or flooding, affecting both urban and rural communities, particularly during the monsoon season. It has an incubation period of approximately 1-2 weeks following which the clinical presentations can range from mild flu like illness with fever, chills, headache, myalgias, nausea, vomiting, conjunctival suffusion etc. to severe life threatening complications such as Acute Renal Failure, Pulmonary Hemorrhage (as seen in Weil's syndrome), Myocarditis, Meningitis, Hepatic Failure & Septic shock. Leptospirosis predominantly involves hepatic and renal tissues; however, extrahepatic and extrarenal manifestations, though rare can include the central nervous system, lungs, heart, gallbladder, pancreas, and ocular structures[2,3]. Pancreatic involvement is particularly uncommon and is generally associated with systemic vasculitis and endothelial injury. These pathological mechanisms may lead to pancreatic damage, resulting in clinical presentations that vary from mild, self-limiting pancreatitis to severe and potentially fatal disease[3].Here, we present a rare case involving a patient with leptospirosis, hyperbilirubinemia and acute pancreatitis.

Case Study

A 44-year-old male from Mumbai who is neither diabetic nor hypertensive was admitted at Ananta Hospital of Medical Sciences and Research Centre in Rajsamand, Rajasthan. He presented with intermittent high-grade fever with chills for the past 15 days along with pain in epigastrium, vomiting, yellowish discolouration of eyes & body and a decreased appetite during the same period. There was no notable past medical history of seizures, head injuries, or substance abuse. On admission, His vital signs were normal. His pulse rate was 90/min, blood pressure was 112/70 mmHg, respiratory rate was 16 breaths/min, oxygen saturation (SpO2) was 97% on room air. Temperature was 97.8°F (axillary). On general physical examination, the patient showed signs of deep Icterus with no signs of pallor, cyanosis, clubbing, lymphadenopathy or peripheral edema. There was hepatomegaly and no rash. The patient was conscious and completely oriented to time, place, and person. The neurological assessment revealed intact cranial nerves, normal deep tendon reflexes, and a negative Babinski's sign. No signs of meningeal irritation, including neck stiffness or a positive Kernig's sign. Auscultation of the lungs revealed normal vesicular breath sounds.After 1 day of admission, patient complaint of bleeding from mouth & blood in urine after which patient became drowsy & lethargic and his saturation was also dropped to 88% on room air.Due to this patient was shifted to MICU for observation. Given the patient's acute febrile illness, a provisional diagnosis of Acute viral hepatitis,malaria, dengue fever, or leptospirosis was considered.

Routine blood investigations showed acute kidney injury, thrombocytopenia, leucocytosis, hyperbilirubinemia and elevated liver enzymes. Arterial blood gas (ABG) analysis indicated type 1 respiratory failure. The patient underwent investigations for acute febrile illness. Results for dengue IgG, IgM, and NS1 antigen were negative, malaria parasites were negative, HAV, HCV, HbsAg, HEV were negative, leptospira IgM test returned positive. An abdominal ultrasonography conducted on admission revealed hepatomegaly (16.2cm) with normal echopattern,Gall bladder sludge with thickened oedematous walls, subtle peripancreatic fat stranding detected. (Serum amylase and lipase tests were recommended for further correlation). Additionally, there was increased echogenicity of the bilateral renal cortices with maintained CMD, prompting a recommendation for renal function tests (RFT). Serum amylase and serum lipase sent on day of admission were recorded at 1152 U/L and 338 U/L respectively. Therefore, based on clinical features, laboratory parameters, and radiological investigations, the patient was diagnosed with acute pancreatitis. Based on diagnosis of leptospirosis with acute kidney injury, type I respiratory failure, and pancreatitis, the patient was treated with intravenous doxycycline 100mg twice a day, intravenous ceftriaxone 1gram twice a day, along with intravenous fluids and symptomatic management, and among other supportive care. The patient required oxygen support for an initial 5 days after which he was gradually weaned off, and lung function returned to normal. The patient's renal function improved markedly within four days and returned to normal by the ninth day of admission. The patient's platelet count progressively normalized by the fifth day of hospitalization. The patient's general condition improved, and the patient's serum lipase and serum amylase levels returned to normal following which the patient was discharged on day 10.

Investigation	Normal Value	Day 1	Day 2	Day 3	Day 4	Day 6	Day 7	Day 8	Day 9	Day 10
Hemoglobin (g/dl)	11.5-14.5	9.9	7.4	8.0	7.7	9.4	9.2	9.2	8.4	8.6

Hematocrit (%)	35-45	27.3	19.6	22.2	21.3	26.2	26.3	26.0	24.2	25.0
Platelets (/ml)	150,000-400,000	36.0	52	30	90	204	344	409	439	473
TLC (/ml)	4000-11,000	21.7	16.48	22.0	20.3	13.9	15.6	12.6	9.5	9.1
Total bilirubin (mg/dl)	0.2-1.3	48.87	42.9	37.30		12.31	8.90	8.69	6.25	5.73
Direct bilirubin (mg/dl)	0-0.3	45.28	40.5	33.88		10.62	7.28	6.98	4.97	4.38
Indirect bilirubin (mg/dl)	0.0-1.1	3.59	2.43	3.42		1.70	1.62	1.71	1.28	1.35
AST (U/L)	5-35	103	82	60		34	42	47	49	48
ALT (U/L)	13-41	68	55	44		28	30	39	44	49
ALP (U/L)	40-130	189	169	157		162	148	194	211	186
Urea (mg/dl)	15-40	389	380.8	352.7	262	184.6	150	126.1	91.8	63.6
Creatinine (mg/dl)	0.7-1.4	6.5	6.6	5.3	4.5	2.7	1.8	1.9	1.5	1.1
Amylase (U/L)	40-140	338							174	
Lipase (U/L)	0-160	1152							288	

DISCUSSION

In India, leptospirosis was first observed in 1920s in Andaman & Nicobar island. The disease has been documented in various regions, especially in coastal & tropical regions like Tamil Nadu, Kerala, Karnataka, Andhra Pradesh, Maharashtra, Gujarat, west bengal etc[4]. In this case patient was living in Mumbai when he first developed symptoms. Patient was working in a Ice cream manufacturing factory where there was exposure to rats. In the reported case, the diagnosis of this condition was based on clinical manifestations associated with history of contact with animals and favorable epidemiological factors in the region. Leptospirosis primarily occurs during the rainy season (July to October), though sporadic cases are seen year-round[3]. The incubation period of leptospirosis is 7- 12 days, but it can range from 2 to 20 days.A large proportion of individuals infected with leptospirosis show no symptoms. Among those who do develop symptoms, most experience a mild and self-limiting fever accompanied by symptoms such as headache, muscle pain, and redness of the eyes. In some cases, the disease progresses to a more serious condition known as Weil's syndrome. Weil's syndrome represents a severe manifestation of leptospirosis characterized by multi-organ dysfunction resulting from vasculitis, endothelial injury, and inflammatory infiltration. Clinically, it presents with jaundice, acute renal failure, and hemorrhagic manifestations. The liver and kidneys are the most commonly affected organs, whereas involvement of other organs such as the pancreas is infrequent and typically associated with systemic vasculitis. In the diagnostic evaluation of acute pancreatitis, concurrent measurement of serum amylase and lipase is recommended, particularly in patients presenting with abdominal pain[2],[3],[4]. In the present case, the patient fulfilled the criteria for severe acute pancreatitis as per the revised Atlanta classification, evidenced by persistent organ failure. In general, mortality from severe leptospirosis (especially with MODS or Weil's syndrome) can range from 5–40%. If acute pancreatitis is present, especially with associated renal failure, shock, or hepatic dysfunction, mortality may be higher, reported up to 40–60% in some small case series and reports[2]. Microscopic Agglutination Test (MAT) is gold standard whereas ELISA detects specific antibodies & is widely used due to availability. Molecular methods like PCR detects leptospira DNA in blood, urine, or CSF and culture can be done from blood, CSF, or urine but it requires special media (EMJH) & it take weeks to grow so it is not helpful for acute management. Timely initiation of treatment has been shown to significantly enhance clinical outcomes and accelerate recovery, whereas delayed intervention is often associated with increased morbidity. Mild Leptospirosis is treated by oral Doxycycline (100 mg BD) while Amoxicillin (500 mg TID), Ampicillin (500 mg TID) & Azithromycin (500 mg OD) are effective alternative antibiotics for treatment of mild to moderate leptospirosis, especially when doxycycline is contraindicated (e.g., children, pregnancy). Severe leptospirosis is treated by IV penicillin. Parenteral antibiotics like Cefotaxime, Ceftriaxone & Doxycycline can also be used alternative to penicillin for treatment of severe leptospirosis[6].

CONCLUSIONS

Acute pancreatitis, though rare in leptospirosis, is a clinically significant complication associated with increased morbidity and mortality.

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