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Case Report

A rare case of complicated pancreatitis due to leptospirosis

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ABSTRACT

The COVID-19 pandemic and the actions taken to combat it have greatly impacted the health infrastructure of all nations. Here we present a rare case of leptospirosis with severe acute pancreatitis, bilateral peripheral gangrene, disseminated intravascular coagulopathy and multiorgan failure. This is a rare presentation of leptospirosis wherein the patient had no history suggestive of acquisition of leptospires. The patient was started on doxycycline but still could not be saved due to the multisystem involvement.

1. Introduction

The COVID-19 pandemic and the actions taken to combat the pandemic is being seen to have impact on the psychosocial, economic and health infrastructure of the various countries across the globe. This is especially true for the low-to-middle income countries having a high population burden with a poor infrastructure. As the world leaders are concerned about the impact of COVID on the diseases like TB, HIV and malaria, the other tropical diseases like scrub typhus, leptospirosis etc are getting neglected [1]. Diagnosing these diseases at an early stage could enable timely treatment and thus save the patient [2]. Here, we present a case of leptospirosis presenting with pancreatitis, acute respiratory distress syndrome, Disseminated Intravascular coagulopathy and acral gangrene.

2. Case

An adult non-alcoholic labourer was bought to the medical emergency of a large tertiary care hospital of India with a history of non-radiating abdominal pain with persistent vomiting for 4 days along with altered sensorium and respiratory distress for one day. There was no history of fever, radiation of pain, abdominal distension, hematemesis or melena. On examination the patient had icterus and tachypnea. The patient was tested COVID negative by Xpert SARS CoV2 (Cepheid, Danaher, CA, USA) in the emergency and his other hematological and biochemical investigations were sent. His laboratory parameters revealed anemia (Hb – 8.1 g/dL, MCV – 107 fL and RDW - 20) with neutrophilic leukocytosis (TLC– 29000/μL) and thrombocytopenia (platelet count– 62,000//μL). Peripheral smear showed macrocytic RBC with neutrophilic leukocytosis with left shift and toxic granulations and low platelet count. INR was 1.4 and DIC profile showed mildly prolonged PT and aPTT (PT = 16.8s with control of 12s and aPTT was 44s with control of 40s) with normal thrombin time and fibrinogen levels. He had acute kidney injury (Blood urea – 147 mg/dL and serum creatinine – 8.4 mg/dL) with oliguria and metabolic acidosis (pH-7.3). Liver biochemical tests done on second day of illness showed hepatocellular type of jaundice (total bilirubin – 5.4 mg/dL with conjugated fraction being 4 mg/dL; ALT/AST/ALP – 623/209/287; serum albumin – 2.6 g/dL). Serum amylase and lipase on day 2 of pain were 1422 U/L and 2900 U/L, respectively. Arterial blood gas analysis showed metabolic acidosis with hypoxic respiratory failure with PaO2/FiO2 ratio of 201. Ultrasound abdomen at admission showed bulky and heterogenous pancreas with mild hepatospleenomegaly and normal outline of liver with moderate ascites. Gall bladder was normal. Ascitic fluid work up showed low SAAG, high protein ascites with high amylase with cell count of 120/μL with 60% polymorphs. Two possible syndromic diagnoses were considered. One was severe acute pancreatitis with multiorgan dysfunction syndrome and the second was acute infective etiology (tropical illness in monsoon season) with multiorgan organ failure and associated acute pancreatitis. He was empirically started on intravenous piperacillin/tazobactum and doxycycline from day of admission and was put on hemodialysis.

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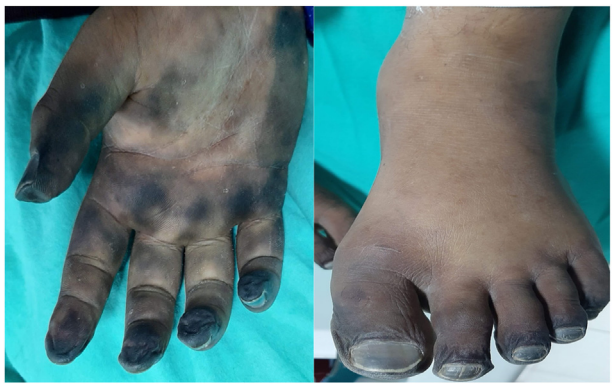

Fig. 1. Figure showing bilateral peripheral acral gangrene.

From Day 2 onwards, the patient also developed fever alongwith blackish discoloration of the extremities followed by dry gangrene of tips of fingers, toes and over the surface of palms and soles (Fig. 1). Jaundice worsened with rise in bilirubin levels to maximum of 19 mg/dL (conjugated fraction being 15 mg/dL). The infective etiological work up showed positive Leptospira IgM ELISA (Panbio Pty. Ltd., Queensland, Australia), which was confirmed by positive PCR for Leptospira in urine. Other infective etiology work up was negative (Malaria antigen test, peripheral smear for malaria antigen, Dengue NS1 and IgM serology, Scrub typhus IgM ELISA, IgM ELISA for Hepatitis A and E, HBsAg, Anti-HCV, HIV serology as well as SARS CoV2 Xpert test). Repeat ultrasound on day 5 showed 10 × 7 cm partially liquefied acute necrotic collection in lesser sac.

Over the next 4 days, the patient worsened with multi-organ dysfunction. He was given hemodialysis daily for the persistent acute kidney injury with hyperkalemia and was continued on mechanical ventilation for persistent ARDS. Intravenous meropenem was added in place of piperacillin/tazobactum and doxycycline was continued. The percutaneous drainage of acute necrotic collection was done with 12 Fr pig tail catheter, which drained only 50 mL of necrotic fluid with altered blood. Despite these measures, the patient developed refractory shock and had cardiac arrest and died after 7 days of admission. He was diagnosed as a case of severe acute pancreatitis, acute respiratory distress syndrome, acral gangrene and disseminated intravascular coagulopathy with multiorgan dysfunction (MOD) due to leptospirosis.

3. Discussion

Here, we report a patient of leptospirosis having rare presentations of pancreatitis, acute respiratory distress syndrome, Disseminated Intravascular Coagulopathy and acral gangrene. In this patient the source of leptospirosis could not be elicited. Leptospirosis, a neglected zoonotic

Table 1
Overview of previously described cases of leptospirosis and pancreatitis.

S. No	Case, Country	Diagnosis of leptospirosis	ICU/operation	Antibiotic treatment given	Patient outcome
1	Present case, 2020	IgM ELISA n PCR with urine PCR positive	Yes/No	Piperacillin/tazobactam, doxycycline & meropenem	Death in 7 days
2	Gomes PEAC; Rev Inst Med Trop Sao Paulo. 2019, Brazil [7]	Microscopic agglutination Test (MAT)	No/No	Ampicillin/sulbactam & ceftriaxone	Death in 4 days
3	Maier A; BMC Infect Dis. 2019, Greece	IgG n IgM ELISA n PCR (negative)	Yes/no	Meropenem	Discharge after 18 days
4	Mazhar M; Hawaii J Med Public Health. 2016, Hawaii	IgM (ELISA)	Yes/no	doxycycline, ceftriaxone, and metronidazole	Discharge
5	N J Herath; BMC Infec Dis 2016, Sri Lanka	MAT	Yes/not reported	Penicillin, cefotaxime & doxycycline	One death, discharge in rest 5
6	Yew KL; J Formos Med Assoc. 2015; Malaysia	IgM by latex agglutination test	Yes/No	ceftriaxone	Discharge
7	Lim SM; J Pak Med Assoc. 2014, Malaysia	IgM	Not reported/not reported	Imipenem & ceftriaxone	Discharge after 2 weeks
8	Panagopoulos P; J Med Case Rep. 2014, Greece/Congo	IgM, rapid agglutination test	Yes/no abdominal operation	Piperacillin/tazobactam, penicillin, meropenem & vancomycin	Discharge after 16 weeks
9	Jain AK, Indian J Surg. 2013, India	ELISA	yes/laparotomy	Not reported	Death
10	Popa D. J Med Life. 2013; Romania	"test for leptospirosis"	Yes/yes	Imipenem, Teicoplanin, rifampicin & moxifloxacin	Discharge after 75 days
11	Ranakawa N, BMC Infec Dis 2013, Sri Lanka	IgM & MAT	Yes/not reported	Meropenem & penicillin G	Discharge
12	Silva AP, Braz J Infect Dis. 2011; Brazil	IgM ELISA	Not reported/not reported	Ceftriaxone & Penicillin	Discharge after 22 days
13	Simon F, J Travel Med. 2012; France	IgM ELISA, MAT & PCR	No/No	Ceftriaxone	Discharge after 10 days
14	Baburaj P, J Assoc Physicians India. 2008, India	IgM (ELISA)	Not reported/not reported	Penicillin	discharge
15	Dalamaga M, J Med. 2004, Greece	IgM (ELISA), Microscopic Agglutination Test (MAT), dark-field microscopy of urine	Not reported/not reported	Doxycycline	Discharge
16	Chong VH, Ann Acad Med Singap. 2007, Singapore	IgM ELISA	Not reported/not reported	Ceftriaxone	Death
17	Spichler A, Am J Trop Med Hyg. 2007, Brazil	IgM & IgG (ELISA)	Yes/no	Ceftriaxone & Ciprofloxacin	Death
18	Kaya E, World J Gastroenterol. 2005, Turkey	microagglutination test, dark-field microscopy	yes/laparotomy	Penicillin G, Ampicillin/sulbactam	One died n one discharge
19	Wang NC, J Microbiol Immunol Infect. 2003, Taiwan			Doxycycline & ceftriaxone	Discharge
20	Pai ND, J Assoc Physicians India. 2002	IgM ELISA	Not reported/not reported	Penicillin G	Discharge
21	Casella G, Am J Gastroenterol. 2000, Italy	ELISA	No/No	Ampicillin	Discharge x 30 days
22	Monno S, J Clin Gastroenterol. 1993, Japan	ELISA and MAT	Not reported/not reported	Streptomycin, clindamycin and piperacillin	Discharge

waterborne tropical infection, presents with diverse clinical manifestations and pancreatitis with acral gangrene are very rare manifestations of the disease. Upon review of literature, it was seen that a few case reports are published from across the globe of leptospirosis presenting with acute pancreatitis as given in Table 1 taken as a modification of table of Maier et al. [3]. Serology was the mainstay of diagnosis in most of the case reports except Germany in 2019 [3] in which PCR was negative from both urine and plasma. In our case, the serology as well as PCR urine were positive. Only two cases of peripheral gangrene with leptospirosis have been reported in literature till date [4,5]. First was reported in 1979 [5] while in the second one [4] was reported in 2014 where diagnosis was based on both microscopic agglutination test as well as IgM ELISA.

Leptospirosis has been seen to be associated with vasculitis which could be due to direct invasion of the infectious agent or due to immune mechanisms such as formation of autoantibodies or immune complex deposition or cell mediated immunity [3]. The presence of vasculitis could lead to peripheral gangrene in the fingers or toes. The etiology of pancreatitis remains unclear but could be due to autoimmune activation of proteolytic enzymes and auto-digestion causing ischemic injury and vasculitis [6]. Careful microbiological investigations helped reach a diagnosis in this first report of pancreatitis, acral gangrene with MODS due to leptospirosis in a COVID-19 negative patient.

Consent

Informed consent was obtained from the patient's relative.

Author contribution

Priyam Batra: Study Conceptualisation and methodology.
Srikanth Gopi: Data curation.
E.V. Vinayraj: Test performance and validation.
K.V.P. Saikiran: Test performance and validation.
Jawed Ahmed: Test performance and validation.
Piyush Pathak: Data curation.
Deepak Gunjan: Data curation.
Kiran Bala: Test performance and validation.
Urvashi B. Singh: Test performance and validation.
Rama Chaudhry: Study Conceptualisation and methodology.

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