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Case Report

A case of neglected hepatorenal dysfunction during the COVID pandemic

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ABSTRACT

As the world fights with the Coronavirus, most of the hospitals are gearing up for the care of these patients. As most of the attention these days is being given to Coronavirus, the patients suffering from other clinical infections are being neglected. SARS-CoV-2 is being kept as the top differential in patients presenting with fever and respiratory distress. We hereby present a case of patient returning from Indonesia during the pandemic presenting with a history of hepatic, renal dysfunction with fever and cough. Due to the pandemic, the patient's fever and cough outweighed the hepatic and renal dysfunction, and the patient had to undergo dialysis before the final diagnosis of leptospirosis could be made.

Introduction

As the world fights with the Coronavirus, most of the hospitals are gearing up for the care of these patients. As most of the attention these days is being given to Coronavirus, the patients suffering from other clinical infections are being neglected. This holds specially true for patients who are being labelled as COVID-19 suspect and put into quarantine. While the system is preparing for ways to get all out of this pandemic, the other infectious diseases are being neglected. In most cases SARS CoV-2 is being kept as the top differential diagnosis of any patient presenting with fever and/or cough. In fact, the complete clinical history of the patient is not even elicited properly. We here present a case of patient returning from Indonesia during the pandemic presenting with a history of hepatic and renal dysfunction with fever and cough. Due to the pandemic, the patient's fever and cough outweighed the hepatic and renal dysfunction, and the patient had to undergo dialysis before the final diagnosis of leptospirosis could be made.

Case report

A 71-year old male patient returning from Indonesia was apparently well at the time of arrival into the country on March 21, 2020. However, as the patient arrived back during the period of nationwide lockdown due to COVID-19, he was advised 14 days quarantine as per the national policy and was sent to the quarantine facility. During the quarantine the patient complained of decreased frequency of micturition after 3–4 days but his complaints were not addressed to as the symptoms were unrelated to COVID-19.

On day 7 of his quarantine, the patient developed anuria along with cough, respiratory distress and high-grade fever. The patient was then labelled as a COVID-19 suspect and was referred to one of the COVID-19 hospitals. Seeing the patient with fever and respiratory distress, oropharyngeal and nasopharyngeal swabs were sent for testing of SARS-CoV-2 only. No other investigations were done and the primary complaint of the patient i.e. oliguria was still unattended and the patient's condition deteriorated. Due to the continuous worsening of his complaints of oliguria, the patient had to be referred to a large tertiary care center on March 28, 2020 for dialysis and further evaluation. In our center, in view of two organ involvement at presentation (respiratory and renal) and requirement of dialysis, he was admitted to ICU.

On thorough clinical evaluation in the ICU, history of bleeding manifestations (vomitus/stools) and loose stools for 3 days was also illustrated along with complaints of redness of eyes for 5 days. Patient's detailed biochemical and hematological investigations sent revealed hepatic and renal dysfunction with mild respiratory alkalosis (Table 1). On detailed interrogation regarding the trip to Indonesia, the patient gave history of contact with local water with abraded skin.

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gene of SARS CoV2 assay [1]. The patient was finally regarded as a case with complicated tropical infection with hepato-mellar dysfunction and had to be shifted to the ICU for stabilisation and one session of hemodialysis. The patient was empirically started on doxycycline and ceftriaxone and the patient responded to it drastically. DNA was extracted from the blood and urine samples using the Qiagen DNA extraction kit (Gmbh, Hilden, Germany) and PCR for 16S gene was performed as per the procedure described by Merien F et al. [2]. Leptospira DNA was detected in both plasma and urine samples sent later. Urine sample was collected on the day 4 of admission when the patient started responding to the treatment. DNA was extracted from the blood and urine samples using the Qiagen DNA extraction kit (GmbH, Hilden, Germany) and PCR for L. interrogans 16S gene was performed as per the procedure described by Merien F et al. [2]. Leptospira DNA was detected in both plasma and urine samples as can be seen in Fig. 1. The patient was continued on doxycycline and ceftriaxone and the patient responded to it drastically.

Discussion
Since the early 2020, the whole world has been preparing to battle SARS CoV-2 as it was declared a pandemic by the WHO on March 11, 2020. The first case in India was reported on the 30th January and India also began preparing for the new threat by various measures such as lockdown, quarantine of immigrants, rapid scale testing etc [3]. However, as we are preparing for the epidemic, we must not forget that other infectious diseases still exist. Earlier a study by Ou and Zhou [4], emphasized that healthcare workers must think beyond COVID-19 in patients presenting to the hospitals specially those having severe disease as there may be coinfection with other pathogens as well. Infact, WHO has also issued statements regarding the importance of ensuring the continuity of malaria and TB services during the COVID-19 pandemic [5]. This happened with our patient as well who must have been in the incubation period at the time of arrival to India from Indonesia. The delay in the diagnosis of the patient lead the patient to multiorgan failure requiring ICU admission and dialysis.

Leptospirosis is a zoonotic and waterborne disease caused by infection with pathogenic Leptospira species. These pathogenic tightly coiled spirochetes generally affect the countries in the tropical and temperate regions [6]. Leptospirosis is a neglected, re-emerging disease affecting nearly 500,000 persons worldwide every year [7]. This bacterial pathogen is pathogenic to humans as well as a variety of animal species, both wild as well as domestic. The disease is transmitted to humans by exposure to soil and water contaminated by the urine of infected animals [8]. Therefore, the main occupational groups at risk are farm workers, field agricultural workers, plumbers, sewer workers, sanitation workers and military troops. Thus, leptospirosis is a perfect example of “One Health” where the interrelationship between humans, animals and ecosystem can improve our understanding of the disease and thus enhance our control and preventive strategies [9].

The natural course of leptospirosis has two clinical phases: acute or septicemic phase; lasting for about a week and the immune phase; characterised by antibody production and shedding of the leptospires in the urine. After an incubation period of 7–12 days, the septicemic phase (first stage) starts in which the bacteria may be isolated from the blood and the CSF. The patient generally presents with non-specific flulike illness marked by sudden onset high grade fever, myalgia, headache and conjunctival suffusion [10]. This is followed by the second leptospiric phase characterised by the detection of circulating antibodies and isolation of bacteria in the urine. It is during this stage that specific organ damage ensues which may result in patient death if not treated timely [10]. Our patient must have been in the incubation period at the time of arrival to India. During his stay in the quarantine facility, the patient developed fever with conjunctival suffusion and oliguria. As these symptoms were not pathognomic of COVID-19 infection, they were not given due attention. The patient subsequently developed signs and symptoms of end organ damage leading to anuria, cough and respiratory distress. Due to the delay in the diagnosis, the patient had hepatic and renal dysfunction (Weil’s disease) at the time of presentation and had to be admitted to the ICU and underwent one session of dialysis. Thus, our patient had respiratory complaints along with hepatic and renal dysfunction due to leptospirosis and reports of leptospirosis patients presenting with pulmonary symptoms have already been published [11]. It is due to this wide range of clinical manifestations that the disease is often misdiagnosed or under diagnosed and it still remains a neglected disease [12].

For patients with mild symptoms of leptospirosis, oral doxycycline and amoxicillin is the treatment of choice. Doxycycline (100 mg twice a day for 7 days) has been shown to reduce the duration and severity of illness in anicteric leptospirosis by nearly 2 days. The role of parenteral penicillin G has been conflicting in various (Randomised Control Trials) RCTs. In few studies, Penicillin G has been used as the miraculous drug to treat severe leptospirosis as it has been associated with reduction in leptospiuria [13]. However, in few other studies Penicillin G has resulted in increased mortality and morbidity due to the
Jarisch-Hexheimer reaction [10]. Thus leptospirosis patients being treated with penicillin need close monitoring. Ceftriaxone given once daily also has similar benefits as penicillin [14]. Ambulatory patients or those having sensitivity to penicillin may be treated with azithromycin [15].

High dose of parenteral penicillin G should be considered in cases with severe leptospirosis [13]. However, penicillin G is associated with various adverse effects and less commonly used in clinical practice nowadays. Moreover, various clinical trials have also shown beneficial effect of third generation cephalosporins: ceftriaxone and cefotaxime [14]. Therefore, this patient was prescribed ceftriaxone and doxycycline due to his sensitivity to penicillin. Since the patient was discharged on the 7th day of admission, his response was positive and he responded.

Conclusion

Through this case report, we would like to appraise the health care professionals about the need to consider other infectious diseases also in the current pandemic. This case report also highlights the need to keep leptospirosis in the differential diagnosis of patients presenting with unexplained febrile illness as the clinical signs of the disease are deceptive and may mimic any other tropical illness like malaria or typhoid.

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