

***Edwardsiella tarda* sepsis with multiple liver abscesses in a patient with Cushing's syndrome**

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Abstract

Edwardsiella tarda is very seldom a cause for gastroenteritis in humans. This organism can also cause extraintestinal infections, such as soft tissue infections, meningitis, peritonitis, osteomyelitis, endocarditis and hepatobiliary tract disease, particularly in the setting of compromised immunity. We describe, for the first time a case of *E. tarda* sepsis with multiple liver abscesses associated with Cushing's syndrome as a result of recreational aquatic exposure.

Key words: Cushing's syndrome, *E. tarda*, liver abscess

Introduction

Patients with Cushing's syndrome are prone to infections, particularly with opportunistic pathogens. Excess circulating glucocorticoids resulting in immunocompromised state predisposes to these infections. *E. tarda* is an opportunistic and rare pathogen in humans. This organism can result in manifestations ranging from an asymptomatic carrier state or mild gastroenteritis to typhoid-like illness and colitis or even extraintestinal infections, such as soft tissue infections, meningitis, peritonitis, osteomyelitis, endocarditis and hepatobiliary tract disease. Such instances are rare and are very often associated with immuno-compromised states. *E. tarda* infection causing liver abscess and sepsis is not reported so far in literature.

Case Report

We report the case of an 18-year-old man who presented with lower gastrointestinal bleeding. Over the past 4 months he had noticed weight gain, progressive loss of muscle mass with concomitant weakness, darkening of skin and nails, along with striae over the abdomen, arms and thighs. He had not been on any medications prior to this. At the time of arrival at the emergency room at our centre, he had additional symptoms of loose stools and abdominal pain, associated with fresh bleeding per rectum, along with fever for 2 days.

On examination he had central obesity, proximal myopathy and striae typical of Cushing's syndrome. He was febrile, hypotensive and had serum potassium of 1.7 mmol/L. A clinical diagnosis of adrenocorticotrophic

hormone (ACTH)-dependent Cushing's syndrome with infectious diarrhoea and probable underlying sepsis was considered. He was initiated on parenteral broad spectrum antibiotics along with anaerobic cover (ceftriaxone and metronidazole), after appropriate specimens were collected for cultures.

After correction of hypokalemia, an upper gastrointestinal (UGI) and lower gastrointestinal (LGI) endoscopy was performed to discern the cause of bleeding per rectum. Although the UGI endoscopy was normal, the LGI endoscopy showed multiple discrete colonic ulcers, without active bleeding. Biopsy of an ulcer revealed amoebic trophozoites in large numbers. Diloxanide furoate was added on after which the loose stools and bleeding subsided.

Meanwhile, the evaluation for Cushing's syndrome revealed a high cortisol and ACTH level, which was not suppressed following high dose dexamethasone [Table 1]. A magnetic resonance imaging (MRI) of the brain with dynamic study of the pituitary (performed on a 3-Tesla machine) did not show a pituitary tumour. Contrast-enhanced computed tomography (CT) of the chest and abdomen showed enlarged adrenal glands bilaterally [Figure 1], but did not show any ectopic source of ACTH production.

During his inpatient stay at the hospital, he developed high grade fever, tachycardia and hypotension suggestive of worsening sepsis, after a period of initial improvement. He developed right hypochondrial pain and an ultrasonogram of the abdomen revealed 2 separate hypoechoic regions in the liver [Figure 2]. These were confirmed to be liver abscesses with a CT scan of the abdomen. Pus from both the foci, were aspirated under ultrasonological guidance. Blood culture and culture of the pus aspirated from the liver grew *E. tarda*. He was started on parenteral ertapenem, and metronidazole was continued.

Subsequently, after recovery from sepsis, he was

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Table 1: Results of evaluation of Cushing's syndrome

	Basal 8 AM	Midnight	Post HDDST (high dose dexamethasone suppression test)
ACTH (pg/ml)	223 (0-46)*	215 (undetectable)*	Not applicable
Cortisol serum ($\mu\text{g}\%$)	68.95 (5.0-25.0)*	49.86 (<1.8)*	43.38 (<1.8)*
24-hour UFC (urine free cortisol) (μg)	6360 in 2000 ml (<100 $\mu\text{g}/24$ hrs)*		6652 in 1640 ml (less than 50% of baseline)*

*All expected normal values are given in parenthesis

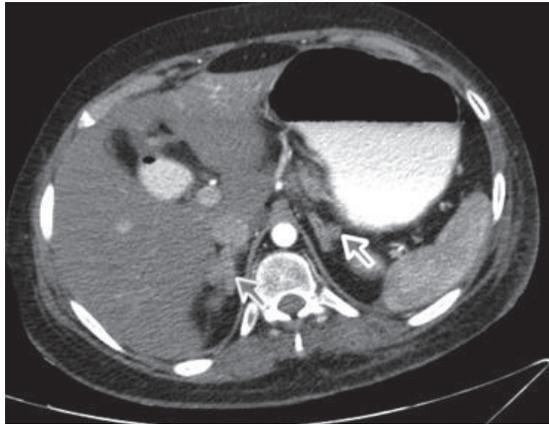


Figure 1: CT of the abdomen showing enlarged adrenal glands bilaterally (inverted 'Y' shaped organs indicated by arrows)

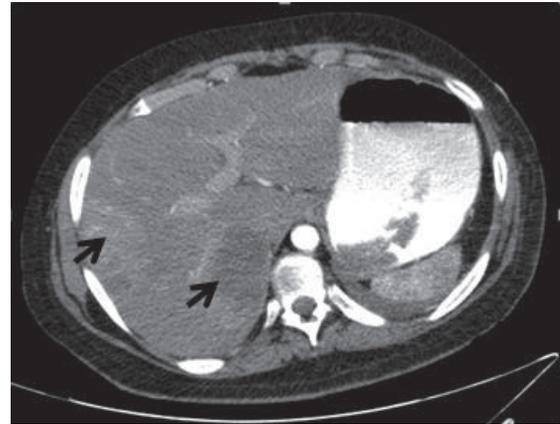


Figure 2: CT of the abdomen showing abscesses in the liver (marked by arrows)

subjected to bilateral adrenalectomy for cure of Cushing's syndrome and had total recovery.

The isolate from blood and pus culture was suspected to be *E. tarda* based on the observation of non-lactose fermenting, oxidase negative, motile, gram negative bacilli (GNB), which utilized glucose fermentatively and produced H_2S on triple sugar iron (TSI) media. The identity was confirmed by performing the biochemical tests whose results are as given below.^[1]

- Observation of negative results for Voges-Proskauer test, citrate, urease, phenylalanine deaminase, malonate, mannitol, trehalose and gelatin hydrolysis.
- Demonstration of positive results for lysine decarboxylase, ornithine dihydrolyase, methyl red test, indole production, maltose and mannose fermentation

On re-analyzing the history, the patient was found to be an avid fishing enthusiast who used to spend long hours in this recreation, wading in a nearby stream.

Discussion

E. tarda, which belongs to the family *Enterobacteriaceae*, is an opportunistic pathogen in humans. It is predominantly found in freshwater environments colonizing the guts of fish and in the intestinal tracts of reptiles, birds and mammals. *E. tarda* is known for causing disease in both humans and fish, and may prove

potentially fatal if left untreated. There are 2 strains of *E. tarda*: A non-virulent form, seen in the human intestine and a virulent one in fish.^[2] It may also be detected as part of the normal human intestinal flora, however this is a rare occurrence.^[3] Infection with *E. tarda* is infrequently encountered in clinical practice and is primarily associated with gastrointestinal disease.^[4] Extraintestinal infections, including soft-tissue infection, bacteremia, meningitis, cholecystitis, osteomyelitis, salpingitis and endocarditis, have been reported.^[5-8] Risk factors for *E. tarda* infections include exposure to aquatic environments or exposure to animals (e.g., reptiles or amphibians), pre-existing liver disease, conditions leading to iron overload, dietary habits (e.g., ingestion of raw fish), extremes of age and a deficient immune system.^[4] A prior report showed similar association of *E. tarda* with *Entamoeba histolytica* in a case of diarrhoea.^[8]

We have here an immunodeficient individual (with Cushing's syndrome and diabetes mellitus) who was infected with an unusual pathogen as a result of a hobby (fishing). The ulceration of the large bowel occurring as part of the pathology associated with amoebic dysentery enabled the entry of this bacterium to the blood stream and subsequent seeding of the liver. This gave rise to the sepsis and the hepatic abscesses that were observed in this patient. Prompt medical management of his primary illness and treatment of the associated infections based on laboratory

reports were crucial in obtaining a favourable outcome. Removal of the source of hypercortisolemia, responsible for his immunosuppressed state, led to total remission of the disease. This case report reiterates the importance of obtaining a detailed history and clinically correlating it with an unusual pathogen.

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