

Aeromonas Hydrophila Cellulitis Without Bacteraemia In Non Immune Compromised, Morbidly Obese Individual: A First Case Report In India

Saurabh Agarwal, Ritu Thapliyal, Lovedeep Saini, Amit Varma, Dorchhom Khrieme

Abstract

Aeromonas hydrophila is implicated in wide variety of skin and soft tissue infections, ranging from cellulitis to life threatening conditions. Most reported cases of this infection are seen in patients who are immunocompromised or who are having a history of aquatic trauma or surgery. Here we present a case of Aeromonas hydrophila infection in a diabetic, morbidly obese and hypothyroid individual with a discharging leg sinus.

Key Words

Aeromonas, Skin and Soft Tissue Infection, Non Immunocompromised, Cellulitis

Introduction

Aeromonas hydrophila bacterium is mainly found in areas with a warm climate and is associated with diseases mainly found in freshwater fish and amphibians, because these organisms live in aquatic environments. It can survive in aerobic and anaerobic environments and implicated in wide variety of skin and soft tissue infections ranging from cellulitis to life threatening conditions like necrotising fasciitis and myonecrosis in humans. Most reported cases of this infection are seen in patients who have a history of an aquatic trauma or surgery. Members of the genus Aeromonas are gram-negative rods that belong to the family Vibrionaceae. It has been suggested that patients who have immunosuppression or malignant diseases are more easily infected with aeromonads, although normal, healthy individuals may become infected as well. (1)

It is very toxic to many organisms. When it enters the body of its victim, it travels through the bloodstream and produces aerolysin, a cytotoxic enterotoxin that can cause tissue damage. Here we present a case of Aeromonas hydrophila infection, which is a rare opportunistic environmental pathogen, isolated from a discharging leg sinus in a diabetic host with co-morbid factors like obesity and hypothyroidism.

Case Report

A 28 year old male sought medical attention for severe dyspnea and a discharging sinus on his right leg. He was morbidly obese and hypothyroid. He was taking

Levothyroxine (175mcg) irregularly. He was a chronic alcoholic and a heavy smoker also. For a long time (approx. 1 year) he had dyspnea on exertion which had become worse for the past 2 months and now had progressed to dyspnea at rest. He also had cough with slight expectoration, lower extremity edema with a discharging sinus on shin of right leg for the past 2 months.

Physical examination revealed slight tachycardia (108bpm), BP- 130/70mmHg, RR- 22/min., O₂ saturation- 97%, weight- 118 kg, height- 162 cm and BMI- 45 kg/m². Chest auscultation revealed reduced breath sounds with occasional wheezing and basal crepts bilaterally. Abdominal examination revealed mildly tender hepatomegaly. Cardiac examination revealed increased JVP. Bilateral lower extremity edema was noted and a pus discharging sinus was present on shin of right leg. The sinus oozed pus continuously and patient felt throbbing sensation in that area. Symptoms and signs of leprosy were also elicited on clinical examination. Laboratory findings- Trop I- <0.01, PT- 16.3 sec. INR- 1.44, S. creatinine- 1.3 mg/dl, Total bilirubin- 2.21 mg/dl (direct- 0.91 mg/dl, indirect- 1.3mg/dl), Total protein- 5.6 g/dl, TSH- 15.58 μ IU/ml, HbA_{1c}- 7%. HIV : negative . Pus culture was positive for gram negative bacilli Aeromonas hydrophila which was sensitive to Tigecycline and Polymixin B only.

Echocardiography showed LVEF- 18%, dilated heart chambers, global hypokinesia of LV suggestive of Dilated

From the Department of Internal Medicine, Shri Guru Ram Rai Institute of Medical and Health Sciences, Dehradun. UK

Correspondence to : Dr. Ritu Thapliyal, Asst. Professor, Dept. of Medicine, Shri Guru Ram Rai Institute of Medical and Health Sciences, Dehradun UK.

Cardiomyopathy/ CHF (NYHA class IV), severe LV systolic dysfunction, grade 3 diastolic dysfunction, mild Mitral regurgitation, mild Tricuspid regurgitation, PA pressure 30mmHg. Valves showed no vegetation.

Chest X-ray showed cardiomegaly, USG abdomen showed pleural effusion, mild ascites with mild hepatosplenomegaly. Venous Doppler study of lower limbs showed subcutaneous edema in bilateral thighs and legs and no DVT.

The final diagnosis of *Aeromonas hydrophila* cellulitis with dilated cardiomyopathy with CHF stage C with right sided pleural effusion, diabetes mellitus type 2, hypothyroidism and leprosy was made and injection Tigecycline was started. Other supportive treatment was also initiated. The patient was discharged after 1 week of hospitalization. The patient came for follow up after 1 week of discharge and showed considerable improvement. The sinus on his leg was dry and healed as well as his dyspnea improved.

Discussion

This was a case of a 28 year old morbidly obese male with diagnosed hypothyroidism who presented with *Aeromonas hydrophila* cellulitis on the lower limb and dyspnea associated with cough. *Aeromonas hydrophila* has been reported infrequently as a cause of human infection. However when the disease is seen, it often occurs in patients with underlying immunosuppression or malignancy and has a high fatality rate. It is a gram negative rod shaped facultative anaerobe. It can exist in aquatic environment, fish, food, birds, pets, natural soil, treated drinking water, domestic water supplies and hospital water supply system. (2,3,4)

GI illness, mostly self limiting diarrhoea and skin and soft tissue infections are most commonly attributed to this pathogen. (5)

As far as skin and soft tissue infections are concerned, *Aeromonas* is implicated in a wide spectrum of infections ranging from cellulitis to life threatening necrotizing fasciitis and myonecrosis. Non- bacteriaemic cellulitis is the most common manifestation associated with *Aeromonas hydrophila* and previous surgery or local trauma in the aquatic environment is the usual predisposing factor. (6) However this infection without myonecrosis or any other underlying condition like liver disease, malignancy, antecedent trauma or immunosuppression has only been rarely reported in literature. (7) We present a rare case of non- fulminant, non- necrotic cellulitis due to *Aeromonas hydrophila* infection in a morbidly obese, hypothyroid and diabetic patient with no history of any trauma. There was no history of GI symptoms and the patient had no exposure to the fresh water fish in the past. There has been no other case documented with similar clinical presentations in India previously. The pus culture for antibiotic sensitivity in this case showed

resistance to all major antibiotics like penicillins, cephalosporins, monobactams, aminoglycosides and even to the documented drugs for the treatment of this infection like chloramphenicol and fluoroquinolones (8). It showed sensitivity to Polymixin- B/colistin and Tigecycline only, which was then administered to this patient.

In the case described herein, the abnormal findings on chest auscultation, presence of morbid obesity, diabetes and chronic dyspnea on exertion which progressed to dyspnea on rest supports the hypothesis of heart failure which could be attributed to his obesity and hypothyroidism. Obesity as underlying cause of CHF could be further consolidated by echocardiography report showing LVEF- 18%, severe LV systolic dysfunction, Grade 3 diastolic dysfunction in absence of any acute valvular dysfunction or MI suggested by normal Trop- I and CK-MB levels.

Conclusion

We present here a first case in India of a 28 year old morbidly obese, hypothyroid and diabetic male patient with *Aeromonas hydrophila* cellulitis presenting as a discharging sinus on the leg. *A. hydrophila* is an opportunistic pathogen which rarely infects humans who have immunocompromised status. This case is unique in its presentation as the patient had no history of previous surgery or exposure to the fish or aquatic trauma and he was not immunocompromised. Other clinical findings in this patient suggestive of DCMP/CHF and mild pleural effusion could be attributed to morbid obesity and severe hypothyroidism.

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