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CASE REPORT

Aeromonas hydrophila urinary tract infection in pregnancy- Case report and literature review

Latha Ragunathan[1], Kannaiyan Kavitha[1], Vinod Raveendran[1], Senthil Pragash Dhandapani[1], Nirmala Jaget[2], Jayanthi Kannivelu[1]

[1] *Associate professor, Dept of Microbiology, Aarupadai veedu Medical College & Hospital, Pondicherry, India*

[2] *Dept of Obstetrics & Gynecology, Aarupadai veedu Medical College & Hospital, Pondicherry, India*

ABSTRACT

A case of a pregnant woman without previous or concomitant disease, who developed an *Aeromonas hydrophila* urinary tract infection (UTI) at 12 weeks gestation, is reported. A brief review of the literature on the association and incidence of Aeromonas spp in urinary infections and also in association with pregnancy is presented. *J Microbiol Infect Dis 2012; 2(1): 26-28*

Key words: *Aeromonas hydrophila*, Urinary tract infection, Pregnancy

Gebede Aeromonas hydrophila üriner sistem enfeksiyonu-Olgu sunumu ve literatür incelemesi

ÖZET

Geçirilmiş hastalık hikayesi ve eşlik eden hastalığı olmayan 12 haftalık gebeliği olan bir kadında gelişen *Aeromonas hydrophila* üriner sistem enfeksiyonu sunuldu. Üriner enfeksiyonlarda *Aeromonas* türlerinin sıklığı ve aynı zamanda gebelik varlığındaki görülmeleri konusundaki literatür gözden geçirildi.

Anahtar Kelimeler: *Aeromonas hydrophila,* Üriner sistem enfeksiyonu, Gebelik

INTRODUCTION

Several pathogens have been implicated as the causative agents of urinary tract infections (UTI) such as *E. coli, Klebsiella, Enterobacter, Serratia, Proteus, Pseudomonas, Providencia, Morganella, Staphylococci, Streptococci, Enterococcus faecalis, Chlamydia*, and *Candida*. However Aeromonas spp. is an uncommon and frequently overlooked cause of urinary tract infections. They are ubiquitous inhabitants of aquatic and marine ecosystem worldwide.[1] Enteropathogenic Aeromonas species are *A. hydrophila*, *A. caviae* and *A. veronii biovar sobria. Aeromonas* are motile, gram negative, nonsporing, oxidase positive, facultative rods that produce wide zone of beta hemolysis on blood agar and ferment a variety of carbohydrates with the production of acid and gas.[2] Aeromonas are not frequently involved in urinary tract infections. Recent review of literature reveals only four cases of urinary infection with *Aeromonas spp.*

Here we report a case of UTI with an unusual pathogen *A. hydrophila* in an 18 year old primigravida who was admitted in our hospital.

CASE REPORT

An 18 year old primigravida with 12 weeks of gestation was admitted to the Obstetrics and Gynecology Department in 2009 with complaints of fever, burning micturition and increased frequency of urination for two days. On examination she was afebrile and the only physical finding was the suprapubic tenderness. No other abnormalities were identified. The microscopic examination of urine showed a leukocyte level of 20/hpf. The urine sample was plated on MacConkey agar and sheep blood agar and incubated at 37°C. After 24 hours, pure growth of smooth entire colonies of

Correspondence: Dr. Latha Ragunathan, Associate professor, Dept of Microbiology, Aarupadai veedu Medical College & Hospital, Kirumampakkam, Pondicherry, India- 607402 Email: latha_kumar71@yahoo.com
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about 2 mm in diameter appeared on the plates. The concentration of the bacteria was calculated to be >105 colonies/ml. The identification was established by growth of hemolytic colonies on blood agar, non-lactose fermenting colonies on MacConkey agar and biochemical reactions. A presumptive identification was made by oxidase, catalase and fermentation of D-glucose initially. After testing for resistance to vibriostatic compound O/129 (150 µg) and observing growth in 6% NaCl, the microorganism was identified as *Aeromonas spp.* The biochemical profile was as follows: organism was catalase and oxidase positive, fermented almost all sugars, indole was produced, esculin was hydrolysed, lysine was decarboxylated, arginine was dihydrolysed and Voges Proskaer was positive. Based on the above tests the isolated organism was identified as *A. hydrophila*. Antibiotic sensitivity testing (Kirby-Bauer Method) demonstrated that the organism was susceptible to amikacin, cefuroxime, ceftriaxone, ciprofloxacin, cotrimoxazole, gentamicin and tetracycline and resistant to amoxicillin-clavunic acid & ampicillin. The patient was started on t cefuroxime 500 mg p.o. twice daily for a week and she completely recovered on her subsequent visit after five days. Repeat urine culture was negative.

DISCUSSION

Aeromonas was isolated in human feces for the first time in 1937. Only in 1980 it was recognized as pathogenic bacteria causing gastrointestinal diseases in human beings.[3] The genus currently includes 14 validated phenotypic species, but only *Aeromonas hydrophila, Aeromonas caviae, Aeromonas veronii biovar sobria* are of clinical importance.[4] *A. hydrophila* is a facultative rod, motile, gram negative bacillus. It is found in non-fecal sewage, and can be isolated from tap water, canals, streams, and rivers.[5] It is responsible for various but infrequent human infections, such as soft tissue infections, diarrhea, bacteremia, peritonitis, septicemia, osteomyelitis and clinical syndrome continues to expand.[6]

Aeromonas as the causative agent of human diarrhea has been well established and extra intestinal infections caused by these organisms are being recognized with increased frequency.7 However urinary infection by *Aeromonas spp* is an unusual occurrence. Recent review of literature reveals only four cases of urinary infection with *Aeromonas spp* in the English language articles and none in association with pregnancy, though one case of *A. septicaemia* has been reported in pregnancy.[8] The recent literature on *Aeromonas* urinary tract infections identifies some key features. In the three cases reported there are some underlying abnormalities. In 1989 *A. hydrophila* was isolated from urine and stool of a newborn male baby with bladder and bilateral renal dilation suggestive of urethral valve involvement and UTI was successfully treated with parenteral cefotaxime for 10 days. The stool culture of the mother was also positive for the same isolate. Immaturity of the immune system and the urological pathology of the patient were attributed as the cause.[9] In 1998, Hsueh et al reported isolation of *A. veronii* responsible for urinary tract infection in a 69-year-old male patient suffering from diabetes mellitus and chronic hepatitis.[10] The urinary tract infection was also related to an indwelling device. In 2003 *A. popoffii* was found to be responsible for a urinary tract infection in a 13-year-old boy suffering from spina bifida with enterocystoplasty that was treated with oral administration of cotrimoxazole (800/160 mg twice per day), with a favorable clinical outcome.[11] In 2007 Benwan et al reported a case of UTI caused by *A. caviae* in a 39-year old male patient with a history of increased frequency of urination, dysuria, hematuria, and weight loss that was treated successfully with administration of oral ciprofloxacin, 500 mg every 12 h, for 2 weeks.[12] The common feature in all these cases was leukocyturia and bacteruria, and the urine pathology resolved with proper antimicrobial therapy in all cases.

Only one case has been reported in literature of septicaemia due to *Aeromonas hydrophila* in pregnancy. *Aeromonas hydrophila* was isolated from blood and bone marrow culture in a 20 yr old pregnant female (24 weeks of gestation) with a history of jaundice, chyluria, fever, chills, and diaphoresis with increased serum liver enzymes. She had a complete remission after treatment with parenteral ceftriaxone.[8]

Our case report is of a pregnant woman with no underlying disease or signs of immunodeficiency who developed *A. hydrophila* UTI at 12 weeks gestation. She also presented with complaints of fever, burning micturation and increased frequency. The vulnerability of pregnant women to infections depends on many host factors, including past and present immunologic

status, hormonal hematologic changes occurring during pregnancy, and perhaps dietary habits.[13]

The route by which *Aeromonas spp* must have gained access to the urinary tract is not clear. It is presumed that clinical infection or asymptomatic carriage within the gastrointestinal tract provides a source of organisms that infect the urinary tract by an ascending retrograde route. But in our patient the stool culture for *Aeromonas* turned to be negative. Thus the source of *A. hydrophila* infection in our patient and the mechanism of spread to the urinary tract remain unknown. However as *Aeromonas* can be isolated from tap water we can hypothesize that washing of genital area with contaminated tap water would have provided the portal of entry for the pathogen.[14]

The pathogenesis of *A. hydrophila* infection is complex and multi-factorial with the involvement of a number of virulence factors. To date, two hemolytic toxins have been described: the *A. hydrophila* hemolysin (hlyA) and aerolysin (aerA).[15] We found our isolate to be haemolysin positive since the colonies were haemolytic on blood agar. This would have contributed to the virulence of our isolate.

Most *Aeromonas* species are resistant to penicillin, ampicillin, carbenicillin, and ticarcillin, and susceptible to second- and third-generation cephalosporins, aminoglycosides, carbapenems, chloramphenicol, tetracyclines, trimethoprim-sulfamethoxazole, and the quinolones.[16] Our isolate was also resistant to penicillin, ampicillin and amoxicillin and sensitive to amikacin, cefuroxime, ceftriaxone, ciprofloxacin, cotrimoxazole, gentamicin, and tetracycline. The patient was started on cefuroxime therapy, and the urine culture was sterile on fifth day.

CONCLUSION

We thus report a case of UTI caused by *A. hydrophila* in a pregnant female that was easily controlled by antimicrobial treatment. This report emphasizes the need for including *A. hydrophila* in the list of pathogens causing UTI in pregnancy.

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