

Symptomatic *Shigella sonnei* urinary tract infection in pregnancy

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Summary

Purpose of investigation: This report describes a case of urinary tract infection (UTI) due to *Shigella sonnei* during pregnancy. **Methods:** A 31-year-old pregnant woman was admitted complaining of left-flank tenderness, dysuria, and fever. **Results:** Following examination, significant laboratory data were collected including increased leukocyte count (10,800/ul with 86% neutrophils) and C-reactive protein (9.6 mg/dl). Urinalysis revealed 30 to 50 leukocytes per high power field while from the quantitative urine culture *Shigella sonnei* was recovered after 24 h incubation at 37°C. After a two-week course with 750 mg cefuroxime every 8 h, the patient experienced gradual resolution of all symptoms and urinary cultures were negative two weeks and one month, respectively, after completing the therapy. The gestational course was uneventful and the patient delivered a healthy baby girl at term. **Conclusion:** *Shigella sonnei* can be responsible for UTI during pregnancy even when no predisposing factors or an apparent source of infection can be identified.

Key words: *Shigella sonnei*; Urinary tract infection; Urine culture; Pregnancy.

Introduction

Shigella bacteria rarely cause urinary tract infection (UTI) since they usually are responsible for gastrointestinal infections [1, 2]. In particular, UTI caused by *Shigella sonnei* is uncommon. We report a case of UTI due to *Shigella sonnei* in a pregnant woman, a rather unusual finding.

Materials and Methods

A 31-year-old female (gravida 3, para 2) presented to our hospital complaining of a two-day history of left-flank tenderness, dysuria, and fever (temperatures at home peaked at 39.0°C). She had no diarrhea or vomiting. Since she was in the second trimester of pregnancy (24 weeks of gestation), she was admitted for further investigation.

Results

On admission, the physical examination revealed a temperature of 38.2°C, a pulse of 64/min, a blood pressure of 110/60 mm Hg, 20 respirations per minute, and left-flank tenderness while significant laboratory data was collected: leukocyte count 10,800/ul with 86% neutrophils, erythrocyte sedimentation rate 59 mm/h, serum creatinine 0.6 mg/dl, albumin 4.0 g/dl, and C-reactive protein 9.6 mg/dl. Urinalysis revealed positive leukocyte esterase, trace amounts of protein, 2+ bacteria, two to four erythrocytes per high power field (HPF) and 30 to 50 leukocytes per HPF.

The same specimen was submitted for bacterial culture onto blood agar and McConkey agar (Becton Dickinson, Sparks, MD, USA) plates using a 0.001 ml quantitative

urine loop. A gram-negative rod in pure growth of more than 100,000 CFU/ml was recovered after 24 h incubation at 37°C on both media. The microorganism was identified as *Shigella sonnei* using the VITEK 2 autoanalyzer (BioMerieux, Marcy l'Etoile, France), the API 20E identification system (BioMerieux, Marcy l'Etoile, France) and by agglutination only in *Shigella* group D antiserum (Becton Dickinson, Sparks, MD, USA). As determined by susceptibility testing, using the VITEK 2 autoanalyzer (BioMerieux, Marcy l'Etoile, France), the isolated strain was resistant to ampicillin and trimethoprim-sulfamethoxazole, and susceptible to amoxicillin/clavulanic acid, cefalotin, cefoxitin, cefuroxime, cefotaxime, ceftazidime, nalidixic acid, ciprofloxacin, norfloxacin, ofloxacin, nitrofurantoin, amikacin, gentamicin, netilmicin, tobramycin, imipenem, and ertapenem. Furthermore, blood, vaginal, and stool cultures were negative. In addition, urine and stool cultures obtained from our patient's children and husband were negative, too. A two-week course with cefuroxime was started (750 mg every 8 h) and the patient had gradual resolution of all symptoms. After completion of the therapy, urinary cultures were negative at two weeks and one month, respectively. Finally, the gestational course was uneventful and a healthy baby girl was delivered at term.

Discussion

Shigella species represent highly communicable pathogens that usually cause gastrointestinal infections and are rarely responsible for UTI [1, 2]. In particular, *Shigella sonnei* UTI is uncommon [1, 3, 4] and, at present, there are only very few cases of UTI due to *Shigella sonnei* reported in the literature so far. Including the present case, we are aware of only ten reported cases

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[1, 3-8]. Of these, five occurred in adults, one male, and four females. Our case is the first to present an UTI due to *Shigella sonnei* during pregnancy. The remaining five cases included children, all females, aged between two months and six years.

We report the case of a 31-year-old female in the second trimester of pregnancy with symptoms of acute pyelonephritis. It has been demonstrated that infections with *Shigella* species during pregnancy can result in complications such as preterm premature rupture of membranes and preterm delivery [9]. In our patient, *Shigella sonnei* was isolated only from the urine culture. However, this case is interesting since the patient was not a fecal carrier and had no history of dysentery. Thus, the time and source of *Shigella sonnei* as well as the mechanism of infection in our patient remain unknown.

The mode, in which *Shigella* species gain access to the urinary tract and UTI occurs, is still unclear. Especially in pregnant women, it seems that the ascending retrograde route might be the most probable way of infection [1]. This could be a plausible scenario since we encounter reported cases of *Shigella* vaginitis in the literature [10]. Other possible mechanisms by which these microorganisms might gain access to the urinary tract are bacteremia and sexual transmission [11-13]. Shigellemia is rare and neither of the aforementioned possibilities could be demonstrated since our patient had no signs of bacteremia and the pathogen could not be isolated from blood cultures or from any member of the family, in particular from her husband.

Conclusion

Shigella sonnei can cause UTI during pregnancy even in the absence of predisposing factors or an apparent source of infection. The response to therapy suggests that eradication of this pathogen from the urinary tract is easy.

References

- [1] Jao R.L., Jackson G.G.: "Asymptomatic urinary-tract infection with *Shigella sonnei* in a chronic fecal carrier". *N. Engl. J. Med.*, 1963, 268, 1165.
- [2] DuPont H.: "Shigella species (Bacillary dysentery)". In: Mandell G.T., Bennet J.E., Dolin R. (eds.): "Principles and Practice of Infectious Diseases". 4th ed. New York, Churchill Livingstone, 1995, 2033.
- [3] Awadalla N.B., Johnny M.: "Urinary tract infection caused by *Shigella sonnei*: a case report". *Ann. Trop. Paediatr.*, 1990, 10, 309.
- [4] Papsian C.J., Enna-Kifer S., Garrison B.: "Symptomatic *Shigella sonnei* urinary tract infection". *J. Clin. Microbiol.*, 1995, 33, 2222.
- [5] Ekwall E., Ljungh A., Selander B.: "Asymptomatic urinary tract infection caused by *Shigella sonnei*". *Scand. J. Infect. Dis.*, 1984, 16, 121.
- [6] Narchi H., Beattie T.J.: "Asymptomatic bacteriuria with *Shigella sonnei*". *Pediatr. Nephrol.*, 1987, 1, 306.
- [7] Anatoliotaki M., Galanakis E., Tsekoura T., Schinaki A., Stefanaki S., Tsilimigaki A.: "Urinary tract infection caused by *Shigella sonnei*". *Scand. J. Infect. Dis.*, 2003, 35, 431.
- [8] Barea A.F., Rodriguez P.M.J., Muna G.P., Aguilera R.: "Urinary tract infection caused by *Shigella sonnei*". *An. Pediatr. (Barc)*, 2003, 58, 614.
- [9] Rebarber A., Star Hampton B., Lewis V., Bender S.: "Shigellosis complicating preterm rupture of membranes resulting in congenital infection and preterm delivery". *Obstet. Gynecol.*, 2002, 100, 1063.
- [10] Murphy T.V., Nelson J.D.: "Shigella vaginitis: report on 38 patients and review of the literature". *Pediatrics*, 1979, 63, 511.
- [11] Stoll D.M.: "Cutaneous shigellosis". *Arch. Dermatol.*, 1986, 122, 22.
- [12] Huebner J., Czerwenka W., Gruner E., von Graevenitz A.: "Shigellemia in AIDS patients: case report and review of the literature". *Infection*, 1993, 21, 122.
- [13] Trevett A.J., Ogunbanjo B.O., Naraqi S., Igo J.D.: "Shigella bacteraemia in adults". *Postgrad Med. J.*, 1993, 69, 466.

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