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Case Report

# A Case of Acute Pyelonephritis in the Postpartum Period

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## Abstract

Postpartum pyelonephritis is a significant infection that can affect recovery after childbirth, often arising within the first 15 days postpartum. This case report presents a case of a 32-year- old woman with left-sided lumbar pain, fever, and dysuria, diagnosed with postpartum UTI due to Staphylococcus epidermidis and left-sided hydronephrosis. After antibiotic therapy and temporary cessation of breastfeeding, her condition improved with no complications. Prompt diagnosis and treatment of postpartum UTIs are crucial to prevent adverse outcomes.

**Keywords:** UTIs; Pregnancy; Postpartum Period

## Introduction

Postpartum infections are connected to pregnancy and develop in the period between the rupture of the amniotic sac and the 42$^{nd}$ day after birth [1]. Common postpartum infections include wound infections; metritis; pelvic thrombophlebitis; urinary tract infections; mastitis; and respiratory tract infections. Urinary tract infections (UTIs)are the second most common type of postpartum infection, following endometritis [2]. Their frequency is from 2 to 4%, including both lower and upper UTIs [3].

## Case Presentation

- 32-year-old female patient is admitted to the Clinic of Nephrology and Dialysis at UMHAT "Dr. Georgi Stranski", Pleven, Bulgaria, one month after giving natural birth to a healthy child from a normal pregnancy.
- **Symptoms:** Left-sided lumbar pain, dysuria, fever (up to 39$^{0}$c), nausea, vomiting.
- **Past Medical History:** 10 years ago, she had a renal colic and spontaneously eliminated a kidney stone.
- Laboratory results:
  - **Urine analysis:** Protein - 0,29 g/L, sediment - 14-15 WBCs, single RBCs.
  - Hb - 125 g/L, RBCs - 4,25x1012/l, Hct - 0,36, WBCs - 13,1x109/l, Plt - 341x109/l.
  - BUN - 6,3 mmol/l, Creatinine- 52 mcmol/l, eGFR - 141 ml/min/1,72m$^2$.

| Amoxicillin-clavulanic acid | S | Doxycycline | S |
|---|---|---|---|
| Ampicillin | S | Fosfomycin | S |
| Cefepime | S | Gentamycin | S |
| Cefoxitin | S | Meropenem | S |
| Ceftazidime | S | Trimethoprim-sulfamethoxazole | S |
| Ceftriaxone | S | Ciprofloxacin | S |
| Cefuroxime (axetil) | S | Levofloxacin | S |

**Table 1**

- **Urine culture:** *Staphylococcus epidermidis* >$10^5$ CFU/ml.
- Hemocultures - negative
- **Ultrasound:** Right kidney - size: 125/55 mm, parenchymal zone 17 mm, normal drainage. Left kidney - size 123/55 mm, parenchymal zone 16 mm, dilated cavity system. Urinary bladder - normal size, smooth margins.

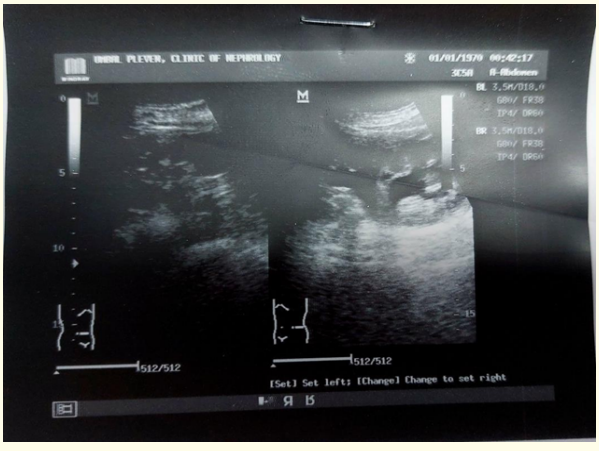


**Figure 1**

- **Treatment**
  - Ceftazidim 2 x 1,0 g/daily i.v. for 7 days, followed by Levofloxacin x 500 mg/daily p.o. for 7 days
  - Fluconazole x 150 mg/daily p.o.
  - Antiemetic drugs
  - Antipyretic drugs
  - Infusions
  - Spasmolytic and analgetic drugs
  - PPI
  - Probiotic drugs
  - Termination of breastfeeding during treatment and 1 month after that

## Discussion

Around 75% of postpartum UTIs develop in the first 15 days after delivery [3].

E. Dalton and E. Castillo report 8-12% frequency of bacteriuria in postpartum females, but only 25% of them present with clinical symptoms of UTI [4].

Although the risk factors for UTIs during pregnancy are well known and described in literature, the risk factors for UTIs in the postpartum period are significantly fewer [5].

The postpartum period is especially high-risk for UTIs due to physiologic and hormonal changes inhibiting lower urinary tract defenses against invading bacteria [6]. During pregnancy there is physiologic urine stasis, dilation of the ureters and vesicoureteral reflux which may persist for several months after delivery. This makes women in the postpartum period as vulnerable to UTIs as pregnant women [7].

Risk factors include [5].

| | |
|---|---|
| Cesarean section | High mother BMI |
| Urinary bladder catheterization | African-American race |
| Use of tocolytic agents | Urinary bladder hypotension |
| Induced delivery (forceps, vacuum extraction) | Placental abruption |
| Epidural anesthesia | Placenta previa |
| Weak pelvic floor | Gestational diabetes |

**Table 2**

Cesarean delivery is considered the single most important risk factor for postpartum infection due to skin and uterine disruption and bladder catheterization [8]. Urethral catheterization is common for cesarean deliveries and increases the daily risk of bacteriuria with 3 ± 8%, which enhances the risk of UTIs [9].

A national documental study held in Denmark for the period 2004-2010 includes 450 856 postpartum women. They are divided in two groups based on the mode of delivery. The first group included 405 803 women who gave birth per vias naturalis. From them 3.5% presented with UTI in the first 30 days after delivery. The second group included 45 053 women who underwent Cesarean section. 4.6% of them developed UTIs. The most isolated microorganism was *Escherichia coli* [3].

Another study, conducted by Babell., *et al*. in Uganda includes 4 231 postpartum women. They report 25 (6%) cases of UTIs. In this study the patients are divided in two groups based on the need for urinary bladder catheterization during delivery. They report 19/25 cases of catheter- associated postpartum UTI, and the causative microorganisms included both Gram-negative and Gram-positive flora. Acinetobacter spp. is the most isolated microorganism in this group. Only 6/25 cases of non-catheter associated UTIs were reported, all of which were caused by Gram-negative microorganisms.

They also find high levels of antibiotic resistance, especially in women with UTIs, caused by Acinetobacter spp., Klebsiella spp., Pseudomonas spp. and Enterococcus spp., which for some antibiotics reaches 100% [1].

## Conclusion

UTIs should not be underestimated, especially in the postpartum period, as they can impact the recovery of women after giving birth. Antibiotic treatment should be performed carefully, and a temporary termination of breastfeeding is recommended during treatment.

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