433 Teams

OBSTETRICS & GYNECOLOGY

Postpartum infection

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Objective:

- **List the risk factors for postpartum infection.**
- **List common postpartum infections.**
- **Develop an evaluation and management plan for the patient with postpartum infections.**

https://www.youtube.com/watch?v=sk9hCAjgUyQ&list=PLy35JKgvOASnHHXni4mjXX9kwVA_YMDpq&index=20

Introduction:

- The rate of post partum complications have been increasing in the last decades, thought to be secondary to the increase of cesarean deliveries.
- Early recognition and treatment of post partum infections decrease maternal morbidity and mortality.

- Postpartum patients have had an **elevated temperature**.

(**Fever**: when the body temperature is above 38 Celsius OR 100.4 degrees Fahrenheit).

How do we approach a patent with postpartum fever?

- **Start with a good history.**
  - (Ask the patient if she has **Pain**? **Redness**? **Drainage**?)
  - Find out if the patient had a **vaginal delivery or cesarean section**? Any **Complications during pregnancy or labor course**?)
  - If she has any **medical issues**? Or any other **risk factors** that may increase her risk of poor wound healing such as **Smoking**.

- **Physical examination:** try to identify the source of the infection by focusing on the important organ system that could be infected during the postpartum time.

The common postpartum infections that will be in our differential diagnosis?

- Urinary tract infection
- Wound infection
- Mastitis or breast abscess
- Endometritis
- Septic pelvic thrombophlibitis
- Drug reaction
- C.difficile associated diarrhea
- Complications related to anesthesia

Urinary tract infection

- Women who have had a **fully catheter** or **vaginal procedure** at **increased risk** of developing a UTI in any postpartum patients .

- Bacteria of the **normal bowel flora** are the most common pathogens including (E.coli, Klebsiellam Proteous, Enterbacter)

- In term of therapy don't forget to **ask her if she is Breastfeeding**? To know which antibiotic to use.

- **The most common Antibiotics** for treating UTI at the postpartum time are: Nitrofurantoin and cephalosporins.

Wound infection

(**Rare after vaginal delivery**) Very rare for a patient to have an infection of the peroneal laceration or the episiotomy side Despite the number of bacteria that are present.

If it happens, she will present with**:** **pain** and **purulent discharge** from the peroneal laceration repair side.

Like all wounds, as they heal the pain should decrease. Pain that starts to **increase** during the recovery face should be occlude that **something maybe wrong**!

- Most wound infections are **cesarean section wound infections** (largest risk factor)
- Patients who have had a cesarean section after labor, diabetes, obesity, **smoking may also develop a wound infection.**
- **causes:**

Streptococcus, Staphlococcus, Gram negative organisms.

- **Management:**

Cephalosporin is the first line of treatment. This will be in patient or out patient depending on the severity of the infection.

Mastitis

- Any **breastfeeding** women may develop a Mastitis.
- **Staph aurous** is the most common organism involved.
- Treated usually with 7-10 days of **Dicloxacillin** course.

Endometritis

It is a polymicrobial infection- aerobic and anaerobic organisms from the genital tract.

Risk factors:

- **Cesarean section** (biggest risk factor)
- Prolonged ROM (rupture of membrane), prolong internal fetal monitoring, anemia, decreased SES (Socioeconomic status).

Patients are admitted and placed on broad spectrum IV antibiotics (IV gentamycin and clindamycin are first line therapy)

Case:

A 24 year-old G1P1 African-American woman, 3 days post op from a primary Cesarean delivery, is evaluated for a fever of 102.2o F. She denies nausea or vomiting, but has noticed increased lower abdominal pain since last even- ing. Her pregnancy has been uncomplicated. She presented to the hospital at 38 6/7 days with rupture of membranes, with cervical dilation of 2 cm/50% effacement. She was given oxytocin to induce labor. She progressed slowly to the active phase, and 9 hours later, she was 5 cm/completely effaced and vertex at zero station, but her labor remained pro- tracted. She had an intrauterine pressure catheter placed and the oxytocin dose was titrated to achieve adequate labor. Despite adequate contractions (240 Montevideo units per 10 minutes), she had no progress for the next 4 hours. The fetus developed tachycardia with a baseline heart rate of 170 beats per minute. At this time, a low transverse Cesarean delivery was performed. The surgery was uncomplicated. She delivered a viable male, 3750 grams, with Apgar scores of 9/9 at one and five minutes respectively. She was given perioperative antibiotic prophylaxis (Ancef 1 gm) at the time of the Cesarean delivery.

1-What findings in the history place this patient at risk for postpartum fever? Are there any other factors that place patients at risk for postpartum infection that we don't learn from this history?

• **Postpartum febrile** morbidity is defined as a temperature of 100.4o F (38 o C) or higher that occurs for more than 2 consecutive days (exclusive of the first postpartum day) during the first 10 days postpartum. Puerperal infection is **more common following Cesarean delivery than vaginal delivery** and is most commonly due to ascending genital tract infection, resulting in endomyometritis. Maternal, intrapartum, and perioperative characteristics can increase the risk for puerperal infections. **The following factors can increase the risk for infection:**

• **Maternal Factors:**
- Poor nutrition
- Anemia

• **Intrapartum Factors:**
- Prolonged membrane rupture
- Frequent vaginal exams during labor
- Intrauterine monitors
- Chorioamnionitis

• **Perioperative Factors:**

- Cesarean delivery

• **The route of delivery**, that is vaginal vs. Cesarean delivery, is the single most important risk factor. The incidence of endometritis following vaginal delivery rarely exceeds 2 – 3%; however, after Cesarean delivery frequency ranges from 10% in low-risk patients who have received prophylactic antibiotics to as high as 95% in a high-risk population without prophylactic antibiotics. In the latter group, i.e. Cesarean delivery, **if the membranes have been ruptured for a prolonged period of time (> than 6 hours) and the patient has had prolonged labor, then the likelihood of endometritis is markedly increased**. There are few data to support a direct increase in endometritis following the use of **electronic fetal monitoring** or on the number of **vaginal examinations**. It is true and related that with slow progress of labor there are more vaginal exams performed.

2-What would you include in your differential for the cause of the postpartum fever?

- **Genital Tract**: Endometritis, pelvic abscess
- **Urinary Tract**: Pyelonephritis
- **Breast:** Breast engorgement, mastitis, breast abscess
- **Wound:** Surgical site infection
- **Pulmonary:** Pneumonia, atelectasis
- **Vascular:** Pelvic thrombophlebitis

- Postpartum endometritis is also termed endometritis, metritis, endomyometritis and endomyoparametritis. Of these, **endometritis** is the most commonly used term to describe postpartum uterine infection.

3-How would you approach evaluating this patient?

• Evaluation of a patient should always commence with a **careful history** and **physical exam**. Since the differential includes a number of extra-pelvic sources, students should not forget to elicit history about and perform examination of these organ systems. The most common reported clinical signs and symptoms of postpartum endometritis include **fever, leukocytosis, lower abdominal pain, uterine tenderness and foul-smelling vaginal discharge**. Clearly, the most important sign and symptom is that of fever. This diagnosis is based on clinical findings alone and there has been no laboratory and/or culture. techniques used to increase the likelihood of this diagnosis:

- **Examination:**

Breast – Pelvic – Wound

- **Laboratories:**

CBC – Bacterial cultures

- **Imaging:**

Usually reserved when there is no response to empiric therapy

4-How would you approach managing this patient?

• It is well established that the **pathogenesis** of postpartum endometritis involves both **anaerobic and aerobic organisms**. This infection is an **ascending infection** and is **caused by** the organisms found in the **normal vaginal flora**. These included the aerobic organisms of Group A and B Streptococcus, Enterococcus, as well as Staphylococcus, Gram-negative aerobic organisms include E.coli, Klebsiella pneumoniae, and Proteus mirabilis, as well as a whole host of anaerobic organisms. Therefore, the primary **management** of puerperal infection is to institute empiric antibiotic therapy. Therefore broad-spectrum coverage is indicated: (see the next slide)

Regimen	Comments
Clindamycin 900 mg + gentamicin 1.5 mg/kg, q8h intravenously	“Gold standard,” 90-97% efficacy, once daily gentamicin acceptable
	Ampicillin added to regimen with sepsis syndrome or suspected enterococcal infection
Clindamycin + aztreonam	Gentamicin substitute with renal insufficiency
Extended-spectrum penicillin	Piperacillin, ampicillin/sulbactam
Extended-spectrum cephalosporin	Cefotetan, cefoxitin, cefotaxime
Imipenem + cilastatin	Reserved for special indications

Failure to respond to the antibiotic therapy within 48-72 hours may **be due to pelvic abscess, septic pelvic thrombophlebitis and/or the emergence of a resistant organism**. The treatment should be **continued until the patient is afebrile**, as well as **asymptomatic**, for 24-36 hours. Patient may be discharged from the hospital at this time with no antibiotic therapy, as follow up oral antibiotics are generally unnecessary.

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