Editorial

Selecting the Appropriate Therapy for Asymptomatic Urinary Tract Infection versus Ascending Chorioamnionitis

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Pregnancy increases the risk of urinary tract infections (UTIs). Hydronephrosis in pregnancy describes the normal process of ureteral dilation since the sixth week of pregnancy. The peak of dilation is between 22 and 26 weeks of gestation and continues until term. Increased progesterone and estrogen cause a reduced tone of the ureters and bladder. The hemodilution process, or plasma volume expansion in pregnancy, causes a reduction in urine concentration and increases the volume of the bladder. A combination of these factors promotes vesicoureteral reflux and urinary stasis. Gestational glycosuria condition is another risk factor for UTIs. Ascending infection from the lower urinary tract to the kidney is the primary mechanism. Urinary tract infections in pregnancy include asymptomatic bacteriuria, acute cystitis, and pyelonephritis.

Pregnancy Accelerates Ascending Infections?

Bacterial colonies can form due to physiological conditions that may lead to a pathological state: a UTI. Several factors contribute to this:

- Relaxation of the bladder and ureteral tone caused by a rise in progesterone levels.
- Pressure from the enlarged uterus on the urinary bladder.
- Alteration of urinary acidity due to glycosuria is an ideal environment for bacterial colonization.

The mechanism of chorioamnionitis and the rupture of the amniotic membranes can explain below:

1. Bacterial Pathogen Ascending Migration to The Uterus

The migration process through some event series: the bacteria in urinary tract trigger an immune response to initiates systemic inflammation. Reproductive tract located near to the anus, making a raise potential to bacterial contamination from the gastrointestinal tract. Colonization of pathogen bacterial can occur in perineum and vaginal introitus, escpecially if low hygine care. The other mechanism if asymptomatic urinary tract infection neglected to therapy, this condition can disrupt the balance of commensal bacteria in vagina. A reduction in protective bacteria, such as Lactobacillus, allows opportunistic pathogenic bacteria to proliferate extensively within the vagina and cervix. As the bacterial colonies expand, the microorganisms migrate in an ascending fashion through the cervical canal, penetrate the cervical plug, and enter the extra-amniotic space, creating the potential for the development of chorioamnionitis.

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2. Immune Response

The local immune reaction mechanism has a unique cascade or leveling step to optimal reaction: the first step is Pathogen-Associated Molecular Patterns (PAMPs) on the invading bacteria bind to Toll-like receptors (TLRs) on maternal decidual cells and fetal trophoblasts. After that the cytokine cascade rolls to trigger the release of potent pro-inflammatory cytokines, specifically Interleukin-6 (IL-6), Interleukin-1 beta (IL-1β), and Tumor Necrosis Factor-alpha (TNF-α). This immune reaction also triggers the recruitment of neutrophils, resulting in the classic histological presentation of acute chorioamnionitis: leukocyte infiltration into the chorion and amnion.

Sequence of Events: Rupture of Membranes and Labor

The established inflammatory environment triggers direct structural changes that can jeopardize the pregnancy. Cytokines activate release of the matrix metalloproteinases (such as MMP-8), which can degrade collagen in the amniotic membrane. This creates a site of structural weakness (locus minoris) in the amniotic membrane, often leading to premature rupture of membranes. The arachidonic acid pathway is activated by inflammation, triggering the release of large quantities of prostaglandins. Preterm labor probably already potentially happens because prostaglandins induce cervical ripening and trigger myometrial contractions.

Therapeutic Considerations

1. UTI asymptomatic without chorioamnionitis

Asymptomatic UTI is a condition where bacteria have not yet ascended to the amniotic sac and still remain in the urinary tract or cervix. In this condition broad-spectrum oral antibiotics—such as amoxicillin-clavulanate, first-generation cephalosporins (e.g., cephalexin or cefadroxil), or fosfomycin—can be used to treat both symptomatic UTIs and asymptomatic bacteriuria in pregnant women. This antibiotic application is in the bacteria before they reach the cervix or ascend to the infection. If chorioamnionitis is suspected and the bacteria have already reached the cervix or are far enough intra uterine, fosfomycin should not be used to treat sites outside the urinary tract due to its low bioavailability; instead, a drug with broader-spectrum efficacy should be used.

2. Urinary Tract Infection (UTI) with Chorioamnionitis

If symptoms such as fever or signs of sepsis, uterine contractions, rupture of membranes, or altered consciousness occur, antibiotic therapy must be administered intravenously to rapidly achieve high drug concentrations in the blood and amniotic fluid. First-line treatment options include a combination of Ampicillin (plus sulbactam in regions with high rates of antibiotic resistance) and Gentamicin; however, the use of Gentamicin should be avoided during pregnancy unless it is strictly necessary to save a life. Therefore, a third-generation cephalosporin (e.g., Ceftriaxone) may serve as an alternative if drug resistance is suspected or in cases of pyelonephritis. Combination therapy including metronidazole may also be considered if anaerobic bacteria are present.

Signs Suggestive of Chorioamnionitis

- Suprapubic pain
- Uterine tenderness
- Preterm contractions
- Foul-smelling amniotic fluid
- Maternal fever
- Elevated leukocyte count
- Maternal and/or fetal tachycardia

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