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Comparing Screening and Treatment of Bacterial Vaginosis and Pregnancy Outcomes

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Abstract

- Evidence shows that bacterial vaginosis (BV) can lead to poor perinatal outcomes.
- The goal of this project is to answer the question of which pregnant patients should be screened for BV and does identification and treatment of BV during pregnancy improve perinatal outcomes.
- Due to variability in a multitude of factors, a generalized recommendation is difficult to make. Lack of recommendations are largely due to harm of treatment in those who were misdiagnosed.
- The development of polymerase chain reaction (PCR) has the capability to reduce misdiagnosis.
- Newer studies have shown benefit of early screening and treatment and the use of clindamycin over the traditional treatment of metronidazole.
- An online search of PubMed, CINHAL, and Cochrane databases in the past 10 years yielded meta-analyses, systematic reviews, random control trials, and cohort studies. Additional sources found using reference lists. Search terms utilized included; bacterial vaginosis, vaginitis, pregnancy, pregnant, miscarriage, screening, pre-term, and asymptomatic.

Introduction

- BV occurs when there is a disruption of the normal flora; *Lactobacilli* and an overgrowth of anaerobic bacteria.
- Chorioamnionitis, preterm delivery (PTD), preterm rupture of membranes (PROM), and miscarriage have all been associated with positive bacterial vaginosis during pregnancy.
- BV is present in 20-50% of women during pregnancy and most cases are asymptomatic.
- Up to 50% of BV cases clear without treatment but others may recur after treatment.
- Alteration in vaginal flora increases risk of acquiring other STDs
- First line treatment for BV positive pregnant women is oral metronidazole or clindamycin.
- Clindamycin has a broader range against atypical mycoplasma and *Mobiluncus* compared to the traditional treatment of metronidazole.

Statement of the Problem

- BV is the most common lower genital tract syndrome in women of reproductive age and research has shown that it is linked to poor perinatal outcomes. There are varying opinions on which pregnant patients should be screened for BV and what treatments should be used.

Research Question

- Would screening and treatment for asymptomatic BV improve perinatal outcomes?

Literature Review

- The 2008 USPSTF and 2015 CDC guidelines recommend against routine screening of pregnant women for BV based on lack of consistent benefit and possible risk of harm.
- Historically, diagnosis is made by Amsel or Nugent criteria.
- Intermediate flora; Nugent score of 4-6 has also been associated with poor perinatal outcomes.
- SOGC guidelines states vaginal therapy is not recommended for the indication of preventing adverse pregnancy outcomes.

Nugent scoring system (0-10) for gram-stained vaginal smears

Score	*Lactobacillus* morphotypes	*Gardnerella* and *Bacteroides* spp. morphotypes	Curved gram-variable rods
0	4 +	0	0
1	3 +	1 +	1 + or 2 +
2	2 +	2 +	3 + or 4 +
3	1 +	3 +	
4	0	4 +	

Van Schalkwyk, J., & Yudin, M. H. (2015). Vulvovaginitis: Screening for and management of trichomoniasis, vulvovaginal candidiasis, and bacterial vaginosis. *Journal of Obstetrics and Gynecologists of Canada, 37* (3), 266-274. https://doi.org/10.1016/S1701-2163(15)30316-9

Incidence rate of bacterial vaginosis and poor perinatal outcomes

- Koumans et al found no statistical significance for preterm delivery between women treated for abnormal flora or BV vs women with normal flora.
- A retrospective study done by McNamee et al found chorioamnionitis in 94% of preterm deliveries (PTD) prior to 24 weeks gestation.
- According to Nelson et al, there is a relationship between asymptomatic BV and less stress, history of STDs, & higher quantity of *Mobiluncus.*
- Usher-Pines et al found lower levels of *Lactobacillus* were associated with African American race and douching.
  - Higher amounts of *Mobiluncus* & *Gardneralla* were correlated with African American race, single women, & smokers.
- A meta-analysis by Van Oostrum et al found a higher incidence of abnormal flora and BV among infertility patients & an association between BV and preclinical pregnancy loss (p<0.01).

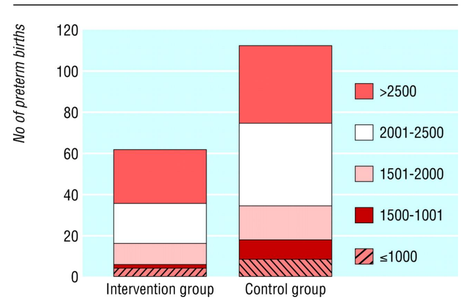
Treatment of bacterial vaginosis and effect on perinatal outcomes

- A Cochrane review of BV positive women done by Brocklehurst et al found treatment with clindamycin reduced the incidence of late miscarriage. PTBs <37 weeks were reduced when intermediate flora was treated with clindamycin.
- Haahr et al made a strong recommendation against treatment for BV positive women using metronidazole to reduce risk of PTD. If clindamycin was started before 20 weeks gestation there was a slight reduction in pPROM.
- Lamont et al found oral clindamycin had a 61% reduction in PTD <37 weeks and a 27% reduction with clindamycin vaginal cream.
- Workowskit & Bolan recommend treatment for all symptomatic patients. Treatment of asymptomatic high risk patients may be beneficial. Treatment of asymptomatic low risk patients remains unclear.
- A Cochrane review done by Sangkomkamhang et al showed screening and treatment for antenatal lower genital infections reduces preterm birth.

Discussion

- The consensus remains against a screening and treatment protocol for all pregnant women.
- Of the treatment trials used for the USPSTF recommendations, one found asymptomatic women who were treated with metronidazole had increased risk of preterm delivery.
- The other treatment trials used for USPSTF recommendations, found no statistically significant adverse effects to pregnancy outcomes.
- “Vaginal contents are in communication with the uterus until the fusion of the *decidua capsularis* with the *decidua paretalis* at 14-16 weeks of gestation". (Koumans et al. 2011, p. 1021)
- Many of the current studies used to make recommendations involve screening that took place after 14-16 weeks gestation.
- BV appears to have a higher incidence among women with infertility and is associated with preclinical pregnancy loss.
- Risk factors for BV include; history of miscarriage, PTD, or infertility. Age < 30, African American race, recent history or current smoker, increased number of sexual partners, history of STDs, douching, high school level of education or less.
- Alteration in vaginal flora increases risk for acquiring other sexually transmitted diseases.

Screening & treatment of asymptotic BV, Candidiasis, & Trichomonas



Number of spontaneous PTD < 37 weeks. (p=0.0001)

Kiss, H., Petricevic L., Husslein, P. (2004). Prospective randomized controlled trial of an infection screening programme to reduce the rate of preterm delivery. *BMJ* 329(7462): 371. https://doi:10.1136/bmj.38169.519653.EB

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Applicability to Practice

- USPSTF guidelines are currently under revision.
- BV can now be diagnosed using polymerase chain reaction (PCR). It is predicted to have a sensitivity of 100% and specificity of 93%.
- Much of the research does not include if other infections were present at the time of diagnosis or if the patients have had history of vaginitis or STDs.
- It appears *Candida*, *Trichomonas*, and other STDs can play a role in miscarriage and can also contribute to the patient being asymptomatic to a BV infection.
- Further studies are needed that focus on using PCR for diagnosis, early screening; prior to the closure of the decidua, and clindamycin for treatment.
- Screening may also be beneficial for those struggling with preclinical miscarriage.

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