Vaginitis

Is the wet prep out of the building?

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No disclosures related to this topic
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<table>
<thead>
<tr>
<th>Women with vaginal discharge</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Normal</strong></td>
<td>30%</td>
</tr>
<tr>
<td>Bacterial vaginosis</td>
<td>23-50%</td>
</tr>
<tr>
<td>Candida vaginitis</td>
<td>20-25%</td>
</tr>
<tr>
<td>Mixed</td>
<td>20%</td>
</tr>
<tr>
<td>Desquamative inflammatory</td>
<td>8%</td>
</tr>
<tr>
<td>Vaginitis</td>
<td></td>
</tr>
<tr>
<td>Trichomoniasis</td>
<td>5-15%</td>
</tr>
</tbody>
</table>

Is vaginal discharge ever “normal”?

• Few primary studies and most of low quality.
• Quantity and quality of vaginal discharge varies considerably across women and during the menstrual cycle.
• Symptom of vaginal discharge is non-specific.
• Vaginal discharge is often thought to be vaginitis.

Vaginal symptoms are very common

• Presence or absence of a microbe corresponds poorly with the presence or absence of symptoms.
• No agreement about timing, color or characteristics of discharge among women with vaginal discharge
• Most women think vagina should be “dry”.
• Vaginal wetness may be normal.


Patient with chronic vaginal discharge

• 17 year old GO complains of lots of heavy white vaginal discharge which is bothersome.
• Regular periods, denies any sexual activity.
• Numerous evaluations for STI’s, all negative.
• Treated for vaginal candida, BV and trich although there was no evidence for any infection and did not resolve discharge.
Physiologic vaginal discharge

- Patients and providers may consider that a thick white discharge is most frequently caused by candidiasis.
- May lead to repeated use of unnecessary antifungal therapy and prompt concerns of recurrent infection if not resolved.

Accurate diagnosis of vaginal complaints

- Traditionally considered “simple”.
- Thus, commonly managed by phone.
- Patients often insist on this approach and decline office visit for a variety of reasons.
- Diagnosis by phone is only marginally better than random chance.

Accuracy of telephone triage

- 26% who called to get refills were treated for similar symptoms in the previous 4 months without exam.
- No specific symptoms allow triage personnel (by phone) or clinicians (by visual inspection) to correctly diagnose vaginitis with high degree of certainty.
  - Kappa =poor agreement <0.40
  - Telephone triage should be discouraged.

Frustrated New Patient

- 32 year old G2P2 presents with “lots of yeast infections” since delivery of her 2nd child 2 years ago.
- Self medicates with OTC yeast remedies every 1-2 months with inconsistent relief of symptoms.
- If no relief, calls PCP’s office and typically an azole is prescribed without an office visit.
- She is frustrated and wonders if her husband should be treated.
Women with chronic vaginitis

- May specify how disruptive the problems are and how frustrating the symptoms are to quality of life.
- Often will self-medicate with a variety of OTC products and alternative meds to reduce symptoms.

*Self-treatment may make the symptoms worse. Acting as their own provider.*

Most common diagnoses in 200 patients with chronic vaginitis

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>n=200 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact dermatitis</td>
<td>42 (21)</td>
</tr>
<tr>
<td>Recurrent vulvovaginal candidiasis</td>
<td>41 (20.5)</td>
</tr>
<tr>
<td>Atrophic vaginitis</td>
<td>29 (14.5)</td>
</tr>
<tr>
<td>Vulvar vestibulitis syndrome</td>
<td>25 (12.5)</td>
</tr>
<tr>
<td>Lichen simplex or sclerosus</td>
<td>22 (11)</td>
</tr>
<tr>
<td>Physiologic leukorrhea</td>
<td>18 (9)</td>
</tr>
<tr>
<td>Desquamative inflammatory vaginitis</td>
<td>16 (8)</td>
</tr>
<tr>
<td>Bacterial vaginosis</td>
<td>13 (6.5)</td>
</tr>
</tbody>
</table>


Alternative therapies used by women with chronic vaginitis

<table>
<thead>
<tr>
<th>Therapy</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yogurt</td>
<td>226 (46.9)</td>
</tr>
<tr>
<td>Acidophilus pills</td>
<td>162 (34.7)</td>
</tr>
<tr>
<td>Other health-food supplements</td>
<td>69 (14.4)</td>
</tr>
<tr>
<td>Low-carbohydrate diet</td>
<td>63 (13.1)</td>
</tr>
<tr>
<td>Garlic or garlic supplements</td>
<td>41 (8.5)</td>
</tr>
<tr>
<td>Low-oxalate diet</td>
<td>27 (5.6)</td>
</tr>
<tr>
<td>Acupuncture</td>
<td>22 (4.6)</td>
</tr>
<tr>
<td>Glucosamine tablets</td>
<td>17 (3.5)</td>
</tr>
</tbody>
</table>

*Nyirjesy P et al. Obstet Gynecol 2011;117:856-861*

Clinical diagnosis vs. DNA probe n=535

<table>
<thead>
<tr>
<th>Clinical Diagnosis</th>
<th>TV Only</th>
<th>BV Only</th>
<th>CV Only</th>
<th>TV/BV Mixed</th>
<th>TV/CV Mixed</th>
<th>BV/TVC/V Mixed</th>
<th>Row Total</th>
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</thead>
<tbody>
<tr>
<td>Normal or other clinical diagnosis</td>
<td>64</td>
<td>25</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>91</td>
<td>153</td>
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<tr>
<td>TV only</td>
<td>0</td>
<td>4</td>
<td>7</td>
<td>0</td>
<td>1</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>BV only</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>18</td>
<td>20</td>
</tr>
<tr>
<td>CV only</td>
<td>44</td>
<td>174</td>
<td>1</td>
<td>9</td>
<td>1</td>
<td>238</td>
<td>356</td>
</tr>
<tr>
<td>TV/BV</td>
<td>0</td>
<td>3</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>TV/CV</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
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<tr>
<td>BV/TVC/V</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Column total</td>
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<td>255</td>
<td>21</td>
<td>16</td>
<td>14</td>
<td>263</td>
<td>535</td>
</tr>
<tr>
<td>Accuracy (%)</td>
<td>46.6%</td>
<td>53.0%</td>
<td>47.3%</td>
<td>53.7%</td>
<td>55.1%</td>
<td>53.9%</td>
<td>53.9%</td>
</tr>
</tbody>
</table>


“Mixed” vaginitis

![Image of mixed vaginitis]

Testing for causes of vaginal complaints

<table>
<thead>
<tr>
<th>Condition</th>
<th>Vagal ph</th>
<th>Saline or 10% Potassium Hydroxide</th>
<th>Amines</th>
<th>Current Gold Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>&lt;4.7</td>
<td>Neutrophil, plasma cells, bacilli</td>
<td>Negative</td>
<td>Clinical diagnosis</td>
</tr>
<tr>
<td>Vulvovaginal candidiasis</td>
<td>&lt;4.7</td>
<td>Hyphae, blastomycetes</td>
<td>Negative</td>
<td>Yeast culture with</td>
</tr>
<tr>
<td>Bacterial vaginosis</td>
<td>&gt;4.7</td>
<td>Cle cell, cocobacillus cell</td>
<td>Positive</td>
<td>Gram stain-Nugent</td>
</tr>
<tr>
<td>Trichomonias</td>
<td>Variable</td>
<td>Variable</td>
<td>Trichomonias vaginitis PCR</td>
<td>Negative</td>
</tr>
<tr>
<td>Atrophic vaginitis</td>
<td>&gt;4.7</td>
<td>Parabacillus, decreased flora</td>
<td>Negative</td>
<td>Maintenance index</td>
</tr>
</tbody>
</table>
This smartphone is neither a diagnostic nor therapeutic tool

“Hi Ms. Smith – Sounds like you have another yeast infection so will send a prescription to your pharmacy”

Negative wet prep does not rule out vaginitis
- Sensitivity of microscopy is approximately 50% compared with NAAT (trich) or culture (Candida).
- Objective signs of vulvar inflammation without vaginal pathogens after lab testing suggests other causes:
  - Mechanical
  - Chemical
  - Allergic
  - Other non-infectious causes

Vaginal and vulvar complaints may complicate management
- Women with vulvar conditions can have vaginal processes such as candidiasis or atrophic vaginitis.
- 71 yo with 10 years of daily vulva itching.
- Severe vaginal dryness and dyspareunia.
- No relief from anti-fungal OTC’s.

Eczema of vulva

Lichen Simplex Chronicus
- Chronic itching eventually developing into burning pain.
  - Years and years of scratching.

Erosions from scratching.
New patient

- 29 year old Go with increased vaginal discharge; no odor, itching, pain.
- Has had 2 new partners in last year.
- Last Pap 4 years ago; negative
- Using OCPs for contraception, no condoms

Speculum exam

Wet Prep

- Wet prep reveals > 10 leukocytes/HPF
- No motile trich, hyphae/buds, clues
- pH 5.0
- Empiric treatment?
- Further testing?

What is the etiology of increased # of leukocytes on wet prep?

- Trichomoniasis
- Chlamydia
- Gonorrhea
- Atrophy
- Desquamative inflammatory vaginitis
- Foreign body
- Cancer

Trichomoniasis Diagnosis

- Wet mount 54% sensitive for trich

Trichomonas vaginalis

- Diagnostic testing (NAAT).
- DNA Assay (UM lab uses Aptima).
- Urine, vagina, endocervix in women.
- Urine, urethra in men.
- Can use same swab for Trich, GC CT.
- Retest 3 months after treatment.
Trichomoniasis treatment

- Metronidazole 2 gm po single oral dose.
  - 84-98% cure.
- Tinidazole 2 gm po single oral dose.
  - 82-100% cure.
  - = or superior to metronidazole (RTCs)
  - More expensive, longer half life, higher serum levels.
- Alternative: Metronidazole 500 mg po bid x 7
- Metronidazole gel not recommended (< 50% cure).

Recurrent or Persistent Trich

- High rate of reinfections (17% reinfected in 3 months).
- Is reinfection from having sex with untreated partner? (> 50%)
  - Or metronidazole resistance (4-10%)
  - Or tinidazole resistance (1%)
- No other topical microbicide is effective.
  (Cochrane 2012;6:CD 007961)

Signs and Symptoms of Vulvovaginal Candidiasis (VVC)

- Pruritus, irritation, soreness, dyspareunia, clumpy white vaginal discharge.
- Vulva erythema, edema, excoriation, fissure formation, introital and vaginal erythema.
- None of these are specific for VVC.
  (2015 CDC)


Diagnosis for women intending to treat “yeast infection” with OTC product

<table>
<thead>
<tr>
<th>Final diagnosis</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>13.7</td>
</tr>
<tr>
<td>Candidiasis</td>
<td>33.7</td>
</tr>
<tr>
<td>Trichomonas</td>
<td>2.1</td>
</tr>
<tr>
<td>BV</td>
<td>18.9</td>
</tr>
<tr>
<td>Other (atrophy, irritant dermatitis etc)</td>
<td>10.5</td>
</tr>
<tr>
<td>BV + Candida</td>
<td>18.9</td>
</tr>
<tr>
<td>BV + Trichomonas</td>
<td>1.1</td>
</tr>
<tr>
<td>Trichomonas + Candida</td>
<td>1.1</td>
</tr>
</tbody>
</table>
Vulvovaginal candidiasis (VVC) diagnosis

- Wet prep.
  - Detects buds/hyphae in 30-50%.
- 10% KOH (Sensitivity 70%).
- 33% with symptomatic VVC have negative KOH.
- **Culture for yeast species (gold standard).**
  - Consider if normal pH and negative wet prep + symptomatic.


What’s the problem with culture?

- Identifying Candida on culture in asymptomatic woman is **not** an indication for treatment.
- Why?
  - 10-20% of women harbor Candida species and other yeasts in the vagina.
  - No need for treatment if asymptomatic.

Candida glabrata and BV

- Link between C. glabrata and BV.
- More tolerant of alkaline pH than C. albicans.
- Can survive high pH typical of BV.
- “Mixed” infection – can be confusing!

Candida glabrata and clue cells

Sobel J. NEJM 1997:337.

New patient

- 35 year old G2P2 complains of foul odor after intercourse.
- Vaginal discharge is “excessive”.
- Douches 3 times/week for odor.
- No resolution with OTC antifungal.
- Frequently treated for BV in the past: recurs within 3 months (odor).
- Treated by phone triage with metronidazole.
Speculum exam

- No unusual discharge, no odor
- Normal appearing vaginal mucosa.

Wet prep

- No trich, hyphae/buds
- Clue cells > 30% of squamous cells
- No lactobacilli
- 1 leucocyte/HPF
- pH 5.0

DIAGNOSIS?

Bacterial Vaginosis

Not an “-itis”
or
“just an annoyance ailment”

What would you do?

Significant risk of morbidity

- PID. (Cherpes TL et al. Sex Transm Dis 2006;33:747-52)
- Vaginitis. (Allsworth et al. OG 2007;109:114)
- Acquisition of Trich, GC, Chlamydia. (Brotman RM et al. J Infec Dis 2010;202:1907-15)

What is Bacterial Vaginosis?

- Polymicrobial condition (Gardnerella, Bacteroides, anaerobic gram-positive cocci, Mobiluncus).
- Shift in the vaginal ecosystem (Lactobacilli are absent or markedly decreased.
- pH of vagina increases.
- Replaced by anaerobic bacteria.
Causation of BV?

- **Failure to establish normal lactobacilli-dominant flora.**
- **Shift of microbial flora.**

Douching for personal hygiene

- Lactobacilli (LB) protect against pathogens by producing lactic acid and lowering pH to inhospitable levels.
- When LB decrease, anaerobic bacteria increase
- **Douching disrupts the normal vaginal flora.**
  - 1-2x/month increases risk of BV by 1.4-fold.
  - **Douching in past 6 months is important predictor of BV prevalence.**
- **ASK!**
  

Bacterial Vaginosis

Amsel criteria (3 out of 4 must be present)

1. Homogenous **grayish-white discharge.**
2. Vaginal pH > 4.5 (greatest sensitivity but lowest specificity)
   - need narrow-range pH paper.
3. **Clue cells** (> 20-40% on HPF microscopy).
   - most specific and sensitive sign of BV.
4. A positive "amine test".
   - Volatilized amines released after addition of 10% KOH.
   - Not Amsel- decreased number of LB’s.

CDC Treatment of BV

- **Reduction of the risk of acquiring STI’s including HIV, chlamydia, GC, Trich, HSV-2.**
- **Treatment**: metronidazole oral or gel, clindamycin cream.
- No support of any probiotic as adjunct or replacement therapy for antibiotics.

Sobel et al. A/OG 2006;194:1283-9
Reichman O et al. Sex Transm Dis 2009;36:732-4

Treating BV recurrences

- Induction: metronidazole gel hs for 10 days.
  
  - Examine 3-5 days after completion. If resolved, start maintenance.
  - Maintenance: Single application of 0.75% metronidazole gel 2x week for 16 weeks.
    - Evaluated every 4 weeks.
    - Observation: follow additional 12 weeks off therapy.

Summary of Vaginitis

- Think mixed infections.
- Think new diagnostic tools (not the phone!)
- Think atrophic vaginitis and other non-infectious etiology.
- Think vulvar skin condition.
The End.......... Thanks!