Vaginitis

Is the wet prep out of the building?

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No disclosures related to this topic

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Women with vaginal discharge

Normal	*30%*
Bacterial vaginosis	23-50%
Candida vaginitis	20-25%
Mixed	20%
Desquamative inflammatory Vaginitis	8%
Trichomoniasis	5-15%

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.*

Schaaf et al. Arch Intern Med 1999;150.

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.

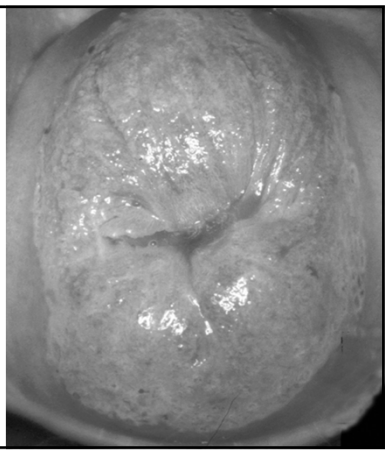
17 year old

Chronic vaginal discharge

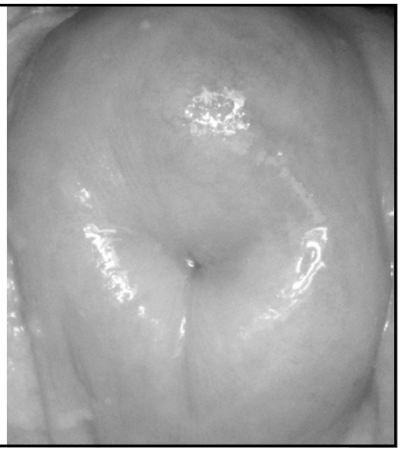
Always wears a pad

Diagnosis?

Vaginitis?



Apgar, Brotzman, Spitzer



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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.*

Allen-Davis et al. Obstet Gynecol 2002;99:18-22

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

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

Nyirjesy P et al. Obstet Gynecol 2006;108:1185-1191

Alternative therapies used by women with chronic vaginitis

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

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

Clinical diagnosis vs. DNA probe n=535

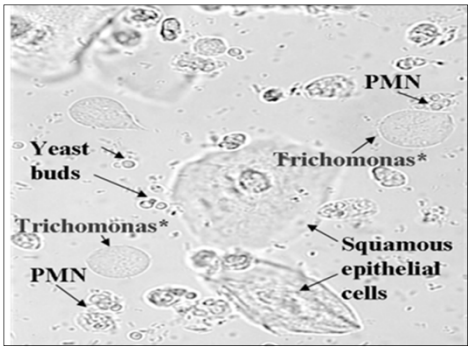
	DNA Probe Laboratory Standard							
Clinical Diagnosis	Negative	TV Only	BV Only	CV Only	BV/TV Mixed	BV/CV Mixed	BV/TV/CV Mixed	Row Total
Normal or other clinical diagnosis*	64	0	21	4	0	3	0	92 (17.2)
TV only	0	4	0	0	7	0	1	12 (2.2)
BV only	46	0	174	5	1	9	1	236 (44.1)
CV only	25	1	9	58	0	18	1	112 (20.9)
BV/TV	0	3	1	0	7	1	0	12 (2.2)
BV/CV	4	0	20	9	0	38	0	71 (13.2)
BV/TV/CV	0	0	0	0	0	0	0	0
Column total	139 (26.0)	8 (1.5)	225 (42.1)	76 (14.2)	15 (2.8)	69 (12.9)	3 (0.6)	535
Accuracy (%)	46.0	50.0	77.3	76.3	46.7	55.1	0	64.5

TV, trichomoniasis vaginalis; BV, bacterial vaginosis; CV, candida vaginitis.
Data are n (%) unless otherwise specified.
* This category also includes miscellaneous noninfectious clinical diagnoses such as contact dermatitis, herpes genitalis, condylomata, presumptive chlamydia or gonorrhea, traumatic injury, etc.

Clinical dx = Hx, pelvic exam, wet prep, pH, amines

Lowe NK et al. Obstet Gynecol 2009;113:89-95

"Mixed" vaginitis



Testing for causes of vaginal complaints

Condition	Vaginal pH	Saline or 10% Potassium Hydroxide Microscopy	Amines	Current Gold Standard
Normal	<4.7	Unremarkable, ±white blood cells, bacillary flora	Negative	Clinical diagnosis
Vulvovaginal candidiasis	<4.7	Hyphae, blastospores	Negative	Yeast culture with speciation
Bacterial vaginosis	≥4.7	Clue cells, coccobacillary flora	Positive	Gram stain (Nugent score)
Trichomoniasis	Varies	Trichomonads	Variable	*Trichomonas vaginalis* PCR
Atrophic vaginitis	≥4.7	Parabasal cells, decreased mixed flora	Negative	Maturation index

Nyirjesy P et al. Obstet Gynecol 2014; 124:1135-1146.

This smartphone is neither a diagnostic nor therapeutic tool

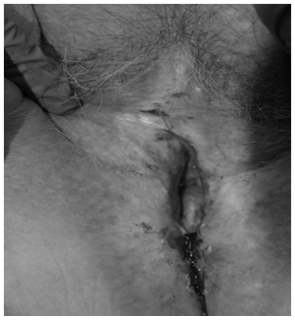
"Hi Ms. Smith – Sounds like you have another yeast infection so will send a prescription to your pharmacy"

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

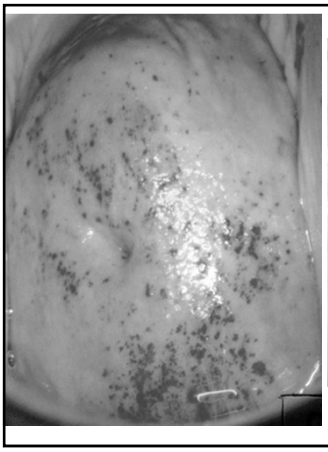
Vaginal and vulvar complaints may complicate management

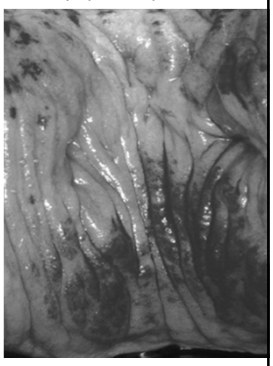
- Women with vulvar conditions can have vaginal processes such as candidiasis or atrophic vaginitis.
- 71 yo with 10 years of daily vulva itching.
- Severe vaginal dryness and dyspareunia.
- No relief from anti-fungal OTC's.



Alan Waxman, MD

Atrophy in 60 year old





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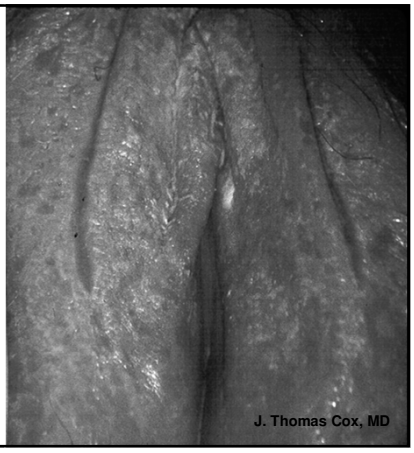
Eczema of vulva

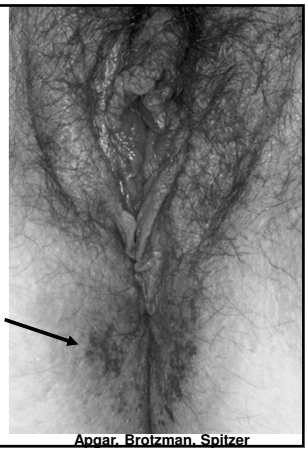


J. Thomas Cox, MD

Lichen Simplex Chronicus

- **Chronic itching eventually developing into burning pain.**
  - **Years and years of scratching.**

Erosions from scratching.



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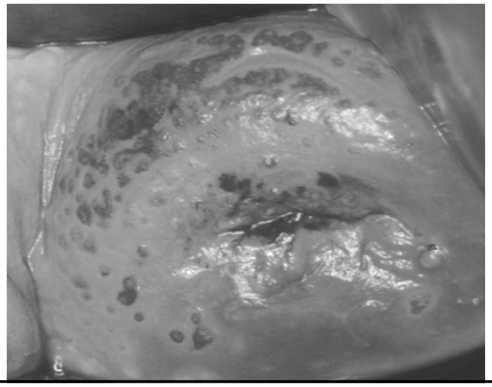
New patient

- 29 year old G0 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

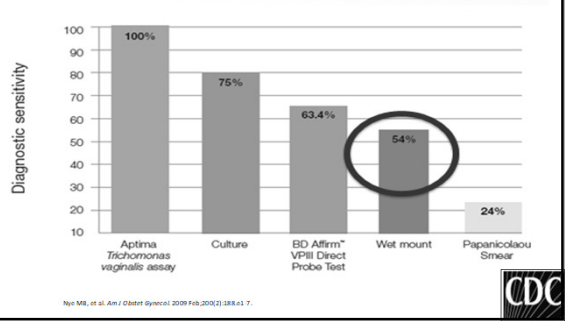
- Wet prep reveals > 10 leukocytes/HPF
- No motile trich, hyphae/buds, clues
- pH 5.0
- Empiric treatment?
- Further testing?

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



Nye MB, et al. Am J Obstet Gynecol 2009 Feb;200(2):188.e1-7.

CDC

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.**

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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).

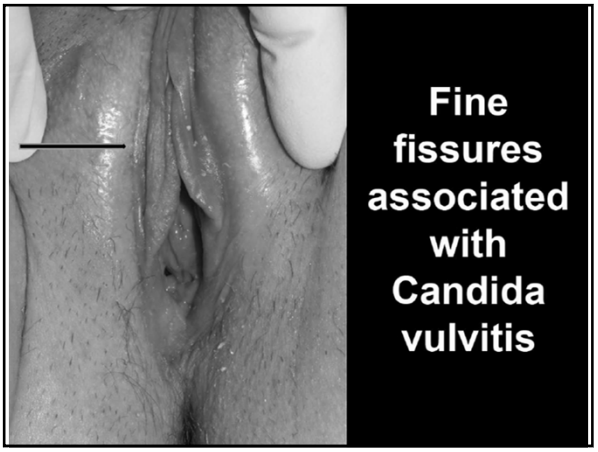
Recurrent or Persistent Trich

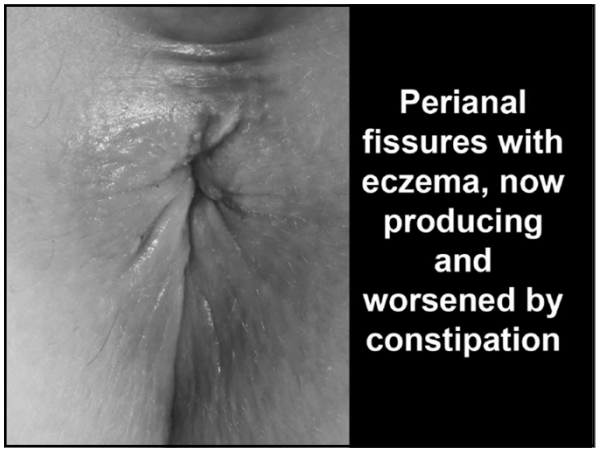
- High rate of reinfections (17% reinfected in 3 months).
- Is reinfection from having sex with untreated partner? (> 50%)
  - Or metronidazole resistance (4-10%)
  - Or tinidazole resistance (1%)
- *No other topical microbicide is effective.* (Cochrane 2012;6:CD 007961)

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)

Anderson MR et al. JAMA 2004;291:1368-79.





Diagnosis for women intending to treat "yeast infection" with OTC product

Final diagnosis	%
Normal	13.7
Candidiasis	33.7
Trichomonas	2.1
BV	18.9
Other (atrophy, irritant dermatitis etc)	10.5
BV + Candida	18.9
BV + Trichomonas	1.1
Trichomonas + Candida	1.1

Ferris et al. Obstet Gynecol 2002:99:419-425

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.

Cartwright et al. J Clin Microbiol 2013;51:3694.
Sobel JD et al. Curr Infect Dis Rep 2015;17:488.

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Gram Stain (Abnormal)
Gram stain is indeterminant for bacterial vaginosis.
Few budding yeast
Few pseudohyphae
Urogenital Culture/Smear (Abnormal)
Candida albicans
Comment:
Moderate

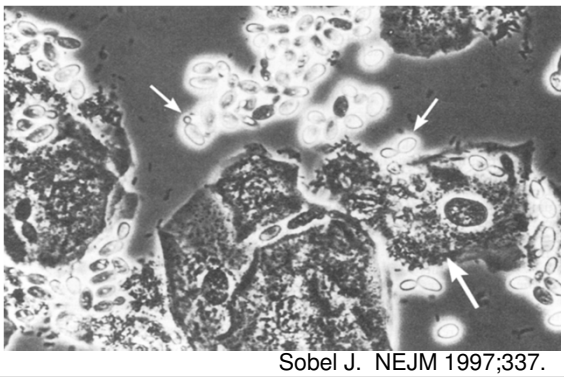
What's the problem with culture?

- 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?

SOURCE: vagina

R E S U L T S

Gram Stain	FINAL	08/26/15 00:38

Gram stain is consistent with bacterial vaginosis.
Moderate clue cells

Urogenital Culture	FINAL	08/28/15 17:17

No beta Streptococcus or yeast isolated.

What would you do?

Bacterial Vaginosis

Not
an "-itis"
or
"just an annoyance ailment"

Significant risk of morbidity

- Preterm labor. (Laxmi U et al. J Matern Fetal Neonatal Med 2012;25:64-67) (Nelson DB et al. J Perinat Med 2009;37:130)
- PID. (Cherpes TL et al. Sex Transm Dis 2006;33:747-52)
- Vaginitis. (Allsworth et al OG 2007;109:114)
- Acquisition of HIV. (Aatashili J et al. AIDS 2008;22:1493) (Cohen CR et al. PloS Med 2012;9:e1001251)
- Acquisition of HSV. (Cherpes TL et al. Clin Infec Dis 2003;37:319-25)
- 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.

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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!

Allsworth et al. Obstet Gynecol 2007;109:114-20.
Brotman RM et al. Am J Epidemiol 2008;168:188-96.

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.

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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.

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

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!