

Urinalysis and Body Fluids CS

Unit 5

6 Vaginal Secretions

Vaginal Fluids - objectives

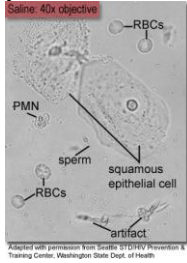
1. Define and list at least three (3) symptoms of vaginitis.
2. Identify at least two (2) sources of error that can occur during the collection and processing of vaginal wet prep specimens.
3. List three (3) common causes of infectious vaginitis.
4. Describe "clue cells" and explain the significance of finding them in a vaginal wet prep.
5. Evaluate the test for estrogenic activity including the appearance of positive and negative results.

Vaginal Secretions

- Normal secretions
 - Clear mucus
 - May turn slightly white or pale yellow when exposed to air
 - Healthy vagina - *Lactobacillus species* predominates
 - pH < 4.5 (3.8-4.5)
 - Amount / volume varies through menstrual cycle
 - Normal microscopic exam
- Abnormal changes
 - Color
 - Consistency
 - Amount

Normal Wet prep

- No symptoms
- Lactobacillus (normal)
- Normal discharge



Vaginitis

- Vaginitis
 - - inflammation or infection of the vulva and vagina
 - NOT a specific disease, but is a very common reason women seek medical attention
 - Estimated 1/3 to 1/2 outpatient visits by women
 - Can occur in all age groups, sexually active as well as sexually non-active.
- Common symptoms
 - Vaginal discharge
 - Foul smell
 - Itching
 - Spotting
 - Pain

5

Vaginitis - evaluation

- Patient history
 - Marital or relationship status
 - Timeline of when symptoms began, etc.
- Symptoms / complaint(s)
- Physical examination
- Tests
 - Physical properties
 - Vaginal pH
 - Microscopic exam / Wet Prep
 - Amine (Whiff) test
 - Cultures, if warranted

6

Vaginitis

- Two (major) types
 - Non- infectious
 - May be caused by soaps (no bubble baths ladies !), chemicals, foreign objects, allergies to condoms / lubricants etc.
 - Infectious (makes up 90% of all cases)
 - Fungal / yeast
 - Parasitic - Trichomonas vaginalis
 - Bacterial

7

Vaginitis

- Specimen - Vaginal Wet Prep
 - Sterile swab (moistened with normal saline)
 - Must process these immediately, ie within 5 minutes
 - Swab in tube with @ $\frac{1}{2}$ mL normal saline, or Ringer's lactate
 - Keeps organisms from drying out if delay is expected
 - **Special collection procedures:** Microbiology cultures for gonorrhoea (GC) must be placed in special transport media immediately.
 - This microbiology testing being replaced by molecular diagnostics
 - Collection / processing errors
 - Insufficient specimen / poor collection
 - Swabs / slide drying out

8

Vaginitis - testing

- vaginal pH
 - Most important preliminary test
 - Normal (childbearing age) < 4.5
 - pH paper



9

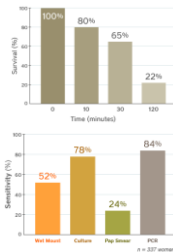
Vaginitis - testing

- Microscopic exam / Saline Wet Prep
 - Sample mixed with saline examined microscopically to look for
 - Budding yeast with elongated pseudohyphae
 - Motile trichomonads & increased segmented neutrophils
 - PMNs & Clue cells

10

Vaginitis - testing

- Microscopic exam / Saline Wet Prep
- Limitations
 - Skill of collection
 - Transport time
 - Trichomonas organisms die / become immotile
 - Skill of technician
- New wave in laboratory testing
 - Immunologic
 - Molecular diagnostic / pcr



Vaginitis - testing

- Amine (Whiff) test
 - Also called potassium hydroxide or KOH preparation
 - Vaginal fluid & 10% KOH placed on a slide
 - Fumes from the slide are smelled to detect presence of 'fishy odor' (trimethylamine).
 - Presumptive for bacterial vaginosis, though can also be positive for trichomonal vaginosis



12

Vaginitis - suspect yeast (candidiasis)

- *Candida albicans*
- Commonly causes a majority of cases
- Alteration of normal vaginal flora
 - antibiotic regimens
 - immunocompromised patients
- Thick white, clumpy or "curd-like" discharge.
- Laboratory findings
 - Normal vaginal pH
 - Identification of yeast cells and elongated pseudohyphae (mycelia forms)
 - saline wet mounts
 - 10% KOH wet preps
 - Gram stain

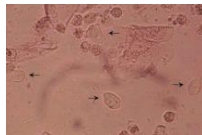


Vaginitis - suspect: *Trichomonas vaginalis*

- *Trichomonas vaginalis* - Free-living organism
- Parasitic vaginitis
 - Swimming / bathing in contaminated water
 - Sexually transmitted
 - Symptomatic - Yellow-Green frothy discharge; or may be asymptomatic
 - Organism seen in urine or on wet-prep
- In males - sexually transmitted urogenital infection
 - Usually asymptomatic
 - Organism may be detected in urine microscopic

T. vaginalis - testing / detection

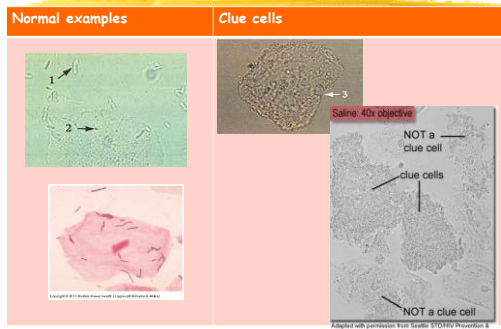
- Laboratory findings
 - Wet-prep microscopic
 - Single celled flagellate demonstrating jerky movements
 - @ size of WBC, but no nucleus and actively motile - unless specimen is old, dry or cold.
 - May demonstrate WBCs
 - DNA and immunological tests
 - Elevated vaginal pH
 - Positive amine / "whiff" test



Vaginosis - suspect bacteria

- Healthy vagina - *Lactobacillus species* predominates
- Bacterial vaginosis
 - *Gardnerella vaginalis*
 - *Mobiluncus species*
 - *Prevotella species* (anaerobes)
- Characteristics (*Amsel criteria)
 - *Homogenous vaginal discharge
 - Amount & Color may vary, but often gray / off-white
 - Usually thin in consistency and malodorous.
 - Lack of WBCs, but increased epithelial cell exfoliation
 - **"Clue cells" (make up 20+%) - most reliable finding
 - *Vaginal pH > 4.5
 - *Positive amine test in the KOH prep

"Clue cells"



Vaginitis - testing summary

Observation / test	Candidia vaginitis yeast	Trichomonas vaginalis	Bacterial
Appearance	Thick white, clumpy / curd-like	Green-yellow & frothy	Thin, gray homogenous
pH	< 4.5	>4.5	> 4.5
Wet Prep microscopic	Budding yeast and pseudohyphae	Motile trichomonads & PMNs	> 20% Clue cells identified
Amine (Whiff) test with 10% KOH	Negative	Negative, or Positive	Positive: fishy odor
Miscellaneous		DNA & immunological tests available	Amsel criteria: at least 3 of 4 must be positive.

Summary

- From the lab's perspective - 3 main causes for vaginitis
 - Yeast infection / candidiasis
 - *Candida albicans* / other species possible
 - *Trichomonas vaginalis*
 - Bacterial
 - From disturbance of normal flora (ie decreased *Lactobacillus*) that allows overgrowth of mixed flora, ie *Gardnerella vaginalis* and others
 - *Gardnerella* - results in 'clue cells'
 - Known pathogens, ie gonorrhoea

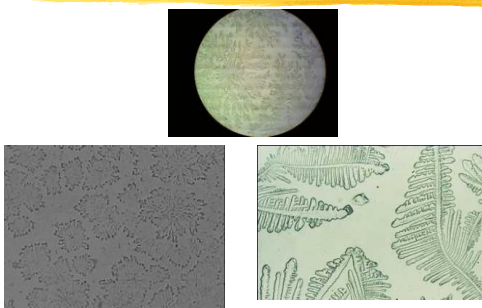
19

Fern test

- Test for estrogenic activity
 - Cervical mucus smeared on glass slide and allowed to dry
 - Examine under the microscope - look for fern-like appearance / pattern
 - Seen during times of increased estrogen - as occurs at time of ovulation.
 - Also done to see if there has been premature leakage of amniotic fluid - as it will also make a fern pattern due to its protein and sodium chloride content.

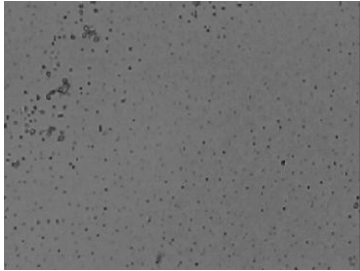
20

Fern test - positive reactions



21

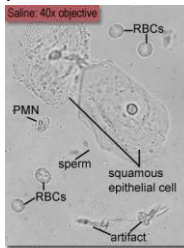
Fern test - negative reaction



22

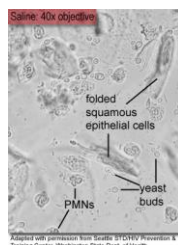
Wet preps - 1

- No symptoms
- Lactobacillus (normal)
- Normal discharge



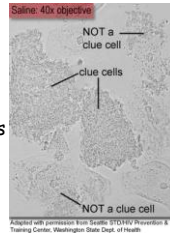
Wet preps - 2

- pH <4.5 (normal)
- KOH microscopic negative & Whiff test negative (no amine odor)
- Normal epithelial cells
- Predominately lactobacillus
- Rare WBC



Wet preps - 3

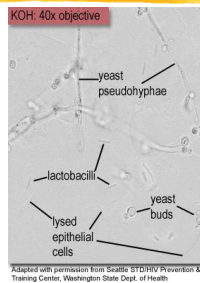
- Positive clue cells
- pH > 4.5
- Whiff test positive
- KOH microscopic negative
- Normal lactobacilli have been overrun by *Gardnerella vaginalis* and other organisms



25

Wet preps - 4

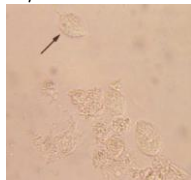
- Positive KOH microscopy
- Whiff test negative
 - No amine odor when mixed with the KOH
- Vaginal pH < 4.5
- Moderate - increased discharge
 - White to light yellow,
- Etiology - *Candida albicans* / *Candida* species



26

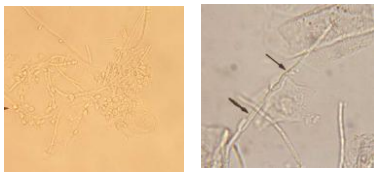
Wet preps - 5

- Microscopy - positive for motile 'trich'
- Whiff test often positive
- Vaginal pH > 5.0
- Discharge - greatly increased
 - Green / yellow purulent, may appear foamy
- Etiology - *Trichomonas vaginalis*



Summary

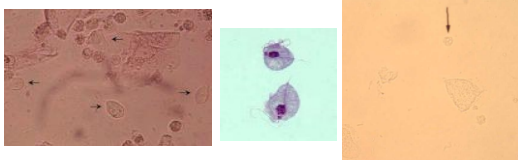
- Yeast - Candidiasis
 - Candida albicans / other species possible
- Microscopic shows mycelia forms



28

Summary

- Trichomoniasis
 - Trichomonas vaginalis
 - @ size of WBC (slide on Rt), but no nucleus and actively motile
 - Unless specimen is old, dry or cold



Reference Listing

- > Lillian Mundt & Kristy Shanahan, Graff's Textbook of Urinalysis and Body Fluids, 2nd Ed.
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