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Point-of-care testing in a patient with vaginal discharge

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ABSTRACT

Point-of-care testing refers to tests conducted at or close to the site of patient care. Point-of-care testing has the potential to generate rapid results that enable the clinician to offer prompt and cost-effective treatment. Vaginal discharge is a common complaint in Dermatology and Venereology practice. Analysis of vaginal smear can give valuable information regarding the condition producing vaginal discharge such as vaginal candidiasis, trichomoniasis, bacterial vaginosis, and gonococcal and chlamydial infections. After getting written, informed consent from the patient, the discharge specimen is collected and pH of the same is assessed. Potassium hydroxide mount, wet mount, and Gram stain study of smears prepared from vaginal discharge help to differentiate between candidiasis, trichomoniasis, bacterial vaginosis, and gonococcal/non-gonococcal infections. Careful collection and preparation of specimen are essential for accurate results.

Keywords: Vaginal discharge, Vaginal candidiasis, Trichomoniasis, Bacterial vaginosis, Gonococcal infections

INTRODUCTION

Vaginal discharge analysis is a common point-of-care testing carried out in dermatology practice.

Conditions producing vaginal discharge vary from physiological causes to non-sexually and sexually transmitted infections. A careful evaluation of vaginal discharge is essential to reach an accurate diagnosis.

INDICATIONS

1. Vaginal candidiasis
2. Trichomoniasis
3. Bacterial vaginosis
4. Gonococcal infection
5. Non-gonococcal infection.

PROCEDURE

Materials needed

Saline-soaked cotton swabs, Cusco's speculum, glass slides, Leishman stain, Gram's stain, 10% potassium hydroxide (KOH), pH indicator strips, cover-slips, culture medium for gonococci, sterile water, and a pair of sterile gloves.

Collection of samples

- A detailed history taking and a thorough clinical examination should be done in all cases.
- Antiseptics should not be applied on the external genitalia before collection of vaginal smear.
- A sterilized Cusco's speculum is inserted into the vagina to visualize the vagina and cervix. Before insertion, the speculum should be held under warm water for a few seconds. The warm water provides sufficient lubrication for speculum insertion. It should be inserted to its full length and gently opened, enabling visualization. [1] Look for any erythema, discharge, or erosions. In case of discharge, the amount, color, character, and smell of the discharge should be noted.
- Vaginal and cervical swabs should be collected separately.
- The vaginal discharge should be collected from the upper part of the posterior fornix and lateral walls of the vagina using cotton swabs. Cervical discharge should be collected from the cervical canal.
- Clean the ectocervix using a sterile cotton swab. Insert another sterile swab 2 cm into the cervical canal, rotate and move from side to side for 5–10 s and withdraw [Video 1].[1]

TESTS DONE AND INTERPRETATION OF RESULTS

The vaginal smears should be tested for the presence of *Trichomonas vaginalis*, *Candida* species, clue cells (indicative of bacterial vaginosis), and gonococcal infection or non-gonococcal infection.

The specimen collected is touched directly on the paper pH indicator strip. Alternatively, the pH Paper can be touched on the speculum after it is withdrawn. The pH paper changes color when exposed to acidic or alkaline substances. A pH value above 4.5 is suggestive of bacterial vaginosis or trichomoniasis.[2]

Three slides should be prepared from the vaginal discharge. Roll the swab with the specimen on the glass slide and spread it to make a smear of 1–2 cm size. One for KOH mount, one for Gram stain, and a third one for wet mount examination.

Video 1: Video demonstrating point-of-care testing in patients with vaginal discharge.

(a) KOH mount: Add two drops of 10% KOH to the vaginal secretions taken on a clean glass slide and note for any ammoniacal odor. The presence of ammoniacal odor suggests the presence of bacterial vaginosis, and this test is known as the amine test or Whiff test.[2] The slide is mounted with a cover slip. Ensure that no air bubble is trapped under the cover slip. The prepared smear is examined under a microscope. *Candida* are identified as highly refractile, round, or oval budding yeast cells.

(b) Gram-stained smear of the discharge should be examined under an oil immersion lens. Normal vaginal flora shows the presence of Gram-positive lactobacilli. Altered vaginal flora shows Gram-negative coccobacilli studding vaginal epithelial cells with a granular surface and blurred margins. These are called clue cells and are suggestive of bacterial vaginosis.[2] Gram-positive pseudohyphae with budding yeast cells are seen in candidiasis.[3]

(c) Wet mount: Specimens for the wet smear should be mixed with a drop of normal saline taken on a clean glass slide. A cover slip should be mounted on the glass slide and examined under a microscope for the presence of motile *T. vaginalis*.[2]

TESTS DONE ON CERVICAL SAMPLES

Two endocervical swabs should be taken. The first swab is for Gram staining, and the second swab is directly plated onto the gonococcal culture medium. The presence of Gram-negative diplococci within polymorphonuclear cells indicates gonococcal infection. In culture media, gonococci (when present) form multiple, small, translucent, soft, emulsifiable colonies with granular surfaces and lobate and crenated margins.[2] When the Gram-stained specimen shows ≥2 white cells per oil immersion field but no Gram-negative, intra-cellular diplococci, a diagnosis of non-gonococcal infection is made.[3]

If facilities are available, nucleic acid amplification tests for *Chlamydia trachomatis* should be carried out.

After the smear analysis, the specimens and materials must be disposed of appropriately, following the guidelines for biomedical waste management.[4]

CONCLUSION

In patients with vaginal discharge, on most occasions, a proper vaginal smear analysis enables the clinician to offer prompt diagnosis and appropriate treatment.

Ethical approval

The Institutional Review Board approval is not required.

Declaration of patient consent

Patient's consent not required as there are no patients in this study.

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Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The author(s) confirms that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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