Clinico-microbiological Correlation of Vaginal Discharge in Reproductive Age

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ABSTRACT

Objectives: The main objective was to study vaginal discharge and its management in relation to commonest microorganisms involved.

Methods: This is hospital based prospective, cross sectional study in 100 consecutive cases of reproductive age women (15 - 49 years) from October through December 2013, in Fewa City Hospital, Pokhara, Nepal.

Results: The most common age group is 30 - 35 years (33%). The most common finding on direct smear is polymicrobial (53%). The most common type of discharge is mucopurulent (53%).

Conclusions: In experienced hand, clinical diagnosis correlates with microbiological findings and patients improved with the medication of WHO regime for syndromic approach to vaginal discharge.

INTRODUCTION

In health, the vagina has a mixed bacterial flora with unique bacterial community but dominated by Lactobacilli. Many other microorganisms may be present in lower concentration including anaerobic, facultative anaerobic bacteria and Candida species. The hormonal environment alters on a monthly basis with additional disturbances to the ecosystem produced by menstruation, hygiene practice and sexual activity. It can introduce a number of new species and pathogens as well as alter pH.

A disturbance in the vaginal ecosystem is in which the lactobacilli are replaced by an overgrowth of vaginal commensals. It is recognized by the most common cause of abnormal vaginal discharge in women of reproductive age group. Abnormal vaginal discharge is the most common gynecologic disorder that manifests with an offensive, non bloody discharge per vagina with or without symptoms of itch.

Vaginal discharge is the most common complaint in women of reproductive age. Microbial agents of abnormal vaginal discharge and cervicitis include Neisseria gonorrhoeae, Chlamydia trachomatis, beta haemolytic streptococci, Ureaplasma urealyticum, Candida albicans, Trichomonas vaginalis etc.

Although vaginitis or inflammation of the vagina generally is both treatable and mild; when left untreated, it is a possible risk for acquisition of human immunodeficiency viral infection (HIV) and acquired immunodeficiency syndrome (AIDS) as well as other complications. Other complications of vaginal infection include pelvic inflammatory disease with subsequent infertility, ectopic pregnancy, pelvic abscess, menstrual disorders, spontaneous abortion, preterm birth and cancer of the cervix.

It is very expensive and complex to carry out gold standard investigation in a country with low resources. At least one microscopic examination of vaginal swab helps to guide for antibiotic treatment against Gram positive and Gram negative bacteria. This will help to avoid empirical treatment. Therefore, over and above the desire to relieve the women of unpleasant symptom, there may be a role in prevention by early diagnosis and prompt treatment of this condition.

METHODS

A hospital based cross sectional study in 100 consecutive cases of reproductive age women between 15 - 49 years with vaginal discharge visiting Gynecology Department from October to
December 2013 in Fewa City Hospital, Kaski, Nepal.

A clinical inference was drawn on microbiological etiology of infective discharge based on history, nature of discharge and gynaecological examination. Nature of vaginal discharge was analyzed according to subjective assessment by the examining doctor and only mucopurulent, white, creamy, yellowish and greenish in color were enrolled. The posterior and lateral vaginal fornices and cervix were sampled by high vaginal and cervical swabs after exposing the cervix with a sterile, unlubricated cuscus speculum. Samples were processed immediately after collection. The characteristics of the discharge such as quantity, color and smell were recorded and the pH of discharge was determined directly with a pH indicator paper and an immediate fishy odor on addition of 1 - 2 drops of 10% KOH was considered as a positive amine test. Bacterial vaginosis is diagnosed if any three out of five possible criteria were present in the vaginal discharge:

- Vaginal pH > 4.7
- Positive amine test
- Presence of clue cells
- Thin homogenous vaginal discharge
- Presence of Gram positive or negative bacteria

High vaginal swab was obtained and sent for wet mount, whiff test and Gram stain.

Exclusion Criteria: Foreign body, urinary and or feculent discharge, bloody discharge, patients on oral antimicrobial therapy or any form of vaginal medication.

The approval from ethics review committee of the hospital has been obtained for this study.

RESULTS

In three months of study period, there were 702 gynaecological cases in our gynaecological Out Patient Department. Among them 250 cases had abnormal vaginal discharge. First 100 cases which had fulfilled the inclusion criteria were enrolled in this study. And 35% had abnormal vaginal discharge as chief complaint.

Table 1: Age wise distribution of the cases (n = 100).

<table>
<thead>
<tr>
<th>Age</th>
<th>No. of patients (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 - 20</td>
<td>11</td>
</tr>
<tr>
<td>20 - 25</td>
<td>17</td>
</tr>
<tr>
<td>25 - 30</td>
<td>21</td>
</tr>
<tr>
<td>30 - 35</td>
<td>33</td>
</tr>
<tr>
<td>35 - 40</td>
<td>10</td>
</tr>
<tr>
<td>40 - 45</td>
<td>6</td>
</tr>
<tr>
<td>&gt;45</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

The most common age group is 30 - 35 (33%).

Fig 1: Types of infection on direct smear evaluation

Polymicrobial infection was the commonest type of vaginitis (53%) followed by *Trichomonas vaginalis* (20%) and candidiasis being the least common (12%). Among them, two cases turned out to be human immunodeficiency viral infection (HIV) positive and three were diabetic. These patients were diagnosed upon request of additional diagnostic tests based on their histories and complaints at the time of consultation.

Table 2: Distribution of cases on the basis of nature of vaginal discharge (n = 100).

<table>
<thead>
<tr>
<th>Clinical Diagnosis</th>
<th>Nature of Discharge</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed Infection</td>
<td>Mucopurulent</td>
<td>53</td>
</tr>
<tr>
<td>Bacterial Infection</td>
<td>Milky white</td>
<td>20</td>
</tr>
<tr>
<td>Trichomoniasis</td>
<td>Thin brown</td>
<td>15</td>
</tr>
<tr>
<td>Candidiasis</td>
<td>Curdy</td>
<td>12</td>
</tr>
</tbody>
</table>

DISCUSSION

This study was conducted in a small group of women and only in one centre. But this study can be considered as one milestone in the future for other similar studies. This study supports that vaginal discharge is the commonest problem in gynaecological practice and one third of patients were with vaginal discharge in our gynaecological outpatient department.

Noble H" found similar type of incidence in his study. The results of this study are similar to the study done by Khan SA. Our results showed predominance of polymicrobial infection as the most common cause of vaginal discharge with the same sample size as in the study by Khan SA. Poor knowledge, lack of hygienic practice and low socioeconomic status were noted to be cause of polymicrobial vaginal infection. The use of non-culture laboratory methods in the initial assessment of abnormal vaginal discharge can be a useful adjunct in the syndromic cases of abnormal vaginal discharge.

Undetermined agents contributed to 15% of cases in this study. Inability to overcome the undetermined causes in this study needed further evaluation by referring to higher centers due to lack of investigation tool in our hospital. It could be possible that a number of women might be suffering from *Chlamydia*, *Ureplasma urealyticum* and other organisms including viruses.
Laboratory diagnosis for *Chlamydia* and viruses are complex and very expensive\(^{14,18}\).

Other opinions for undetermined causes of abnormal vaginal discharge is associated with psychosocial problem of women. One of the study carried out in Goa, India found that the psychological problems are associated with abnormal vaginal discharge\(^9\). It invites further evaluation to establish relation between psychosocial problems and abnormal vaginal discharge or excessive normal discharge. Physical and chemical factors associated with abnormal vaginal discharge were not looked upon by our study tool.

A comparison of Gram stain versus clinical criteria reveals that both are effective for the diagnosis of symptomatic bacterial vaginosis. Gram stain is a common method of assessing bacterial vaginosis in research studies but it requires skilled personnel\(^9\). Bacterial vaginosis is considered as the most common cause of vaginal discharge. In clinical setting, bacterial vaginosis is diagnosed by the presence of the following criteria described by Amsel *et al.*:

- Elevated pH of \( \geq 4.5 \)
- Thin homologous gray-white discharge.
- Amine odor upon addition of 10% potassium hydroxide to vaginal fluid is equally comparable to high vaginal swab analysis for diagnosis of bacterial vaginosis\(^6,10\).

Clinical findings and syndromic approach are very effective methods for managing genital tract infections and helps in reproductive enhancement in a country with low socioeconomic status where there is a lack of diagnostic tools and trained man power\(^{12,20}\). The syndromic approach does not require identification of one underlying etiology. Instead it is based on identification of syndrome that is a group of symptoms and easily recognized signs associated with a number of well defined etiologies. Treatment is provided for majority of the organisms locally responsible for this syndrome\(^{12,20}\). Syndromic management for abnormal vaginal discharge has been recommended by the World Health Organization\(^{11,21}\).

**CONCLUSIONS**

The complaint of vaginal discharge is very common. An accurate diagnosis is based on the knowledge of epidemiology of lower genital tract infection, consistent application of laboratory tests where needed. Because of limited resources we have to rely on our clinical findings and guidelines for maximum benefits of our patients in the periphery.

**REFERENCES**

17. Gupta V, Gupta P, Chatterjee B, Bansal R. Clinicomicrobiological profile of women with vaginal

