

Utility of Laboratory Diagnosis for Confirmation of the Syndromic Case Management in Married Indian Women with Vaginal Discharge

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Abstract

Objective: WHO and NACO recommend treatment of STIs/RTIs on the basis syndromic case management (SCM), even without laboratory confirmation, which may lead to over-treatment. Thus, this study was conducted to evaluate the utility of laboratory diagnosis for confirmation of patients with vaginal discharge diagnosed on the basis of SCM.

Methodology: 234 married women in reproductive age group, diagnosed as having vaginal discharge syndrome were included. Normal saline wet-mount slide preparations were made for detection of motile trichomonads. Gram stained smear were prepared and scored as per classification developed by Nugent. The presence of pseudohyphae and/or budding yeast cells was considered diagnostic of candidal infection. VDRL, TPHA and HIV testing were also done as per protocol.

Results: The median age of the study population was 34 years. Most common cause was bacterial vaginosis (positive= 21.4%, 95% CI= 16.6- 27.1%; intermediate score= 17.5%, 95% CI= 13.2- 22.9%), followed by candidiasis (13.7%, 95% CI= 9.8- 18.7%) and trichomoniasis (0.4%, 95% CI= 0- 2.6%). No etiological diagnosis for vaginal discharge could be established in approximately half of the women. Only two women were HIV positive; one was reactive by VDRL and TPHA tests.

Conclusion: Our study highlights the possible lacunae in SCM. Large number of patients may be over-treated if only syndromic management is followed, with financial, medical and social implications. Thus we recommend, the treatment maybe initiated on the basis of SCM, but it is essential that laboratory diagnosis is sought for and the treatment modified accordingly.

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Introduction

Sexually transmitted infections (STIs) and Reproductive tract infections (RTIs) are important health related issues both globally as well as in India. Around three-fourths of the estimated 340 million annual new cases of curable STIs occur in the developing countries, and STIs account for 17% economic losses because of ill health. ⁽¹⁾ In India, approximately 6% of the adult population suffers from STIs/RTIs. ⁽²⁾ Though exact data is lacking, most of the studies have reported vaginal discharge as the commonest RTI/STI syndrome among women common presenting complaint among women. ⁽³⁾ Bacterial vaginosis, vulvovaginal candidiasis and trichomoniasis are the commonly reported infectious causes of vaginal discharge. ⁽⁴⁾ STIs in female are often accompanied by complications such as pelvic inflammatory disease, infertility, ectopic pregnancy, post-abortal and puerperal sepsis, cervical cancer, chronic physical pain and emotional distress. ^(5, 6)

WHO endorses syndromic case management (SCM) of STIs/RTIs. ⁽⁷⁾ Being an important risk factor for HIV infections, NACO has also incorporated syndromic management of STIs/RTIs in the NACP/ RCH programs. ^(2, 8) Under this approach, STIs/RTIs are classified into easily identifiable syndromes and the treatment is provided depending upon common organisms causing the syndrome, even without laboratory confirmation. While this approach has obvious advantages in terms of early initiation of treatment, better compliance, lower laboratory costs and higher cure rates, this system is not without any disadvantages; chiefly in terms of overtreatment.

Thus, this study was undertaken to evaluate the utility of laboratory diagnosis for confirmation of patients diagnosed and managed as vaginal discharge on the basis of syndromic case management.

Methods

A retrospective study was conducted between January 2014 to December 2014 in Department of Microbiology in a 1600-bedded tertiary care center in North India. During this period, married women in reproductive age groups (18-49 years of age), with the complain of vaginal discharge were included in the study. Consent was taken and the identity of the patients was kept confidential. Patients were

managed on the basis of algorithms of the syndromic approach recommended by National AIDS control organization (NACO), India, after carrying out risk assessment. ^(2, 8)

The laboratory tests were done at the Regional STI Reference, Research and Training Laboratory of Delhi region. Normal saline wet-mount slide preparations were made and observed under light microscope at 100x and 400x magnification for detection of motile trichomonads and budding yeast cells. For diagnosis of bacterial vaginosis, Gram stained smear were examined and graded as per standardized, quantitative, and morphological classification developed by Nugent. Briefly, *Lactobacillus* morphotype were scored as 0,1,2,3 and 4 when number of *Lactobacilli* morphotypic bacilli per oil immersion field were >30, 5-30, 1-4, <1 and 0, respectively. *Gardnerella* morphotype were scored as 0,1,2,3 and 4 when number of *Gardnerella* morphotypic bacilli per oil immersion field were 0, <1, 1-4, 5-30 and >30. While, *Mobiluncus* morphotype were scored as 0,1 and 2 when number of *Mobiluncus* morphotypic bacilli were 0, <1-4 and >5, respectively. Total score of ≥ 7 was considered positive for bacterial vaginosis, 4-6 was intermediate, <4 was negative. ⁽⁹⁾ Gram stained smears of vaginal discharge were also examined for white blood cell (WBC) and clue cells. The presence of pseudohyphae and/or budding yeast cells was considered diagnostic of *Candida* infection.

Three milliliters of blood were collected and transported to Serology laboratory for serological testing for syphilis; sera were separated by centrifuging at 2500 rpm for 10 minutes and stored at 2-8°C, if required. Venereal Diseases Research Laboratory (VDRL) test was carried out using antigen from Serologist to Govt. of India, Kolkata, India. Specimens reactive by qualitative tests were subsequently subjected to quantitative VDRL test with successive two fold dilutions of the serum in 0.9% saline. All the sera reactive in qualitative VDRL test were confirmed for specific anti-treponemal antibodies by *Treponema pallidum* Hemagglutination Test (TPHA) test (Plasmatec Laboratory Products Ltd.), strictly according to the manufacturer's instructions.

All patients were also referred to the Integrated Counselling and Testing Centre (ICTC) at our medical college for voluntary

counselling and testing of the patients' sera for HIV, where the samples were tested in accordance with the strategy III of the NACO guidelines. ⁽¹⁰⁾

Statistical analysis

The study was conducted over a period of one year; all women fulfilling the inclusion criteria were retrospectively included in the study. The data was analyzed and presented as percentages and proportions. 95% confidence interval was calculated using modified Wald method, wherever required.

Result

Over a period of one year, 234 women fulfilling the criteria were included in the study. Of these 234 women, majority were between 31 to 40 years of age (36.3%). The median age of the study population was 34 years (range = 18 – 49 years). With regards to level of education, more than one third women were illiterate, and

very few had completed graduation. (Table 1). Large majority were house-wives/ unemployed (85.9%).

Most common cause of vaginal discharge was found to be bacterial vaginosis, with almost one-fifth showing positive smear and 17.5% having intermediate score as per Nugent's scoring. Vulvo-vaginal candidiasis was also a common cause of vaginal discharge (Table 1). Out of 234 Gram stained smears, 70 (29.9%, 95% CI = 24.4-36.0%) showed presence of ≥ 5 pus cells/ Oil immersion field (1000x magnification). No etiological diagnosis for vaginal discharge could be established in around half of the women. Only two women were HIV positive; one showed VDRL reactivity, though the VDRL titre was low (1:4), she was also reactive by TPHA test. The patients were managed according to their presenting syndromes as per NACO guidelines (vaginal discharge with/without lower abdominal pain).

Table 1. Socio-demographic profile of study population (n=234).

	Number of clients	Percentage (95% Confidence Interval)
Age group (in years)		
≤20	7	3.0 (1.3-6.1)
21-30	85	36.3 (30.43-42.7)
31-40	101	43.2 (37.0-49.6)
41-49	41	17.5 (13.2-22.9)
Education		
Illiterate	99	42.3 (36.1-48.7)
Primary school	23	9.8 (6.6-14.4)
Secondary school	83	35.5 (29.6-41.8)
Graduate/ Undergraduate student	14	6.0 (3.5-9.9)
Postgraduate/ Post graduate student	15	6.4 (3.9-10.4)
Occupation		
Daily wages	12	5.1 (2.9-8.8)
House-wife/ Unemployed	201	85.9 (80.8-89.8)
Business	3	1.3 (0.3-3.9)
Salaried	8	3.4 (1.6-6.7)
Student	10	4.3 (1.7-9.3)

Table 2: Etiological diagnosis of vaginitis/ vaginal discharge in patients managed according to syndrome.

	Number (n=234)	Percentage (95% Confidence Interval)
Bacterial vaginosis:		
Positive	50	21.4 (16.6- 27.1)
Intermediate score	41	17.5 (13.2-22.9)
Vaginal candidiasis	32	13.7 (9.8-18.7)
Trichomoniasis	1	0.4 (0-2.6)
Total	124	53.0 (44.6-61.2)

Discussion

STIs/ RTIs as a whole are one of the commonest ailments affecting mankind. NACO has reported that an estimated 40% of women have RTI/STI at any given point of time but only 1% complete the full treatment of both partners.⁽⁸⁾ Vaginal discharge is often reported to be the most frequent RTI among women.⁽³⁾ In our study, we included 234 married women, who were in the reproductive age group and presented with the general signs and symptoms suggestive of vaginal discharge.

As per NACO guidelines, these women were diagnosed with vaginal discharge syndrome and started on the recommended treatment based on SCM.^(2,8) However, as seen in the present study only around one-third of the cases could be confirmed as having some infectious etiology (bacterial vaginosis, vulvo-vaginal candidiasis and trichomoniasis). Another 17.5% women had intermediate score for bacterial vaginosis. Such low rate of confirmation by laboratory methods of patients treated and managed syndromically has also been reported previously. Chauhan V et al detected bacterial vaginosis in 29.2%, *C. albicans* in 11.5% and *T. vaginalis* in 3.8% sexually active females with vaginal discharge.⁽¹¹⁾ Similarly, Shah M et al found that of 183 cases diagnosed clinically as vaginal discharge syndrome, 38 (20.7%) were positive by laboratory investigations.⁽¹²⁾ Ray K et al reported high sensitivity of the syndromic approach for vaginal discharge syndrome, but the specificity of this method in diagnosing VD was low.⁽¹³⁾ Another study done in sub-Saharan Africa found no significant associations between patient-reported STIs symptoms and laboratory confirmed STIs tests.⁽¹⁴⁾

This could be due to over-diagnosis of STIs by the syndromic approach, resulting in

labelling of even the physiological discharge as pathological and unnecessary treatment. However, it might also be due to use of less than perfect techniques of specimen collection, transport and methods of laboratory diagnosis.

Undoubtedly, syndromic case management has numerous advantages in terms of early initiation of treatment on the first visit of the patient, better compliance, lower laboratory costs and higher cure rates. WHO has also noted that the etiological diagnosis of STI may be problematic in many settings as a result of constraints on time, resources, costs and access to treatment. In addition, variations in the sensitivity and specificity of available tests can affect the reliability of laboratory testing for STI diagnosis.⁽⁷⁾

However, this study highlights the possible lacunae in syndromic case management. As seen in our study, adhering strictly to SCM while not consulting laboratory reports can do more harm than good. Treatment of all cases presenting with a particular syndrome results in receiving antimicrobial drugs against organisms which might not even be responsible of the present condition; thus resulting in exposure to unnecessary side-effects, development of drug resistance and increased treatment costs. Moreover, large number of asymptomatic or subclinical infections are likely to be missed.⁽¹⁾ Distinction between STIs and endogenous RTIs is also important from social point of view; as has been noted previously, labelling of all vaginal discharge as STI may cause domestic and social issues in a woman's life; thus, emphasizing the importance of etiological diagnosis.⁽¹⁵⁾

A study from Goa has reported that vaginal discharge was strongly associated with psychosocial factors (such as common mental disorders and somatoform disorders) as well as

intrauterine contraceptive device, rather than infectious etiological agents. They thus recommended that syndromic management algorithms should be altered so that women with complaints that are non-infectious can be offered psychosocial interventions. ⁽¹⁶⁾ Thus, blindly following the SCM approach may not be entirely appropriate.

Both WHO and NACO mention use of laboratory diagnosis whenever and wherever available, in addition to SCM. Our study emphasizes this point and make us recommend laboratory testing in all cases of vaginal discharge. Efforts should be made to distinguish between the physiological and pathological discharge; infectious or non-infectious causes of vaginal discharge; and identify the causative agent of infectious vaginal discharges. Once the test results become available, switching treatment to specific therapy towards the particular agent seems to be the wisest recommendation.

The present study, thus conclusively shows the prevalent overtreatment of women with vaginal discharge on the basis of SCM. However, our study had few limitations. Firstly, the study was hospital based and not community based; therefore, findings may not entirely represent the local population as a whole. Also, conventional methods as recommended by NACO were used for laboratory diagnosis of vaginal discharge, which might have missed a few cases. ⁽¹⁰⁾

Conclusion

To conclude, the treatment maybe initiated on the basis of syndromic case management, however, it is essential that the treatment is modified as and when laboratory test results become available. In addition, the laboratory services network needs to be strengthened to ensure accurate and standardized availability of diagnostic services.

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