Original Article

Role of Syndromic Treatment as a Cost-effective Approach for Vaginitis at a Tertiary Care Hospital

Kaweeta Kumari

ABSTRACT

OBJECTIVE: To evaluate the clinical characteristics of pathological vaginal discharge & to assess the response of syndromic treatment.

METHODOLOGY: This was a cross-sectional observational study. The place of study was Creek General hospital & United Medical and Dental College. The study period was from September 2017 till December 2018. The sample size was150, this included both pregnant & non-pregnant females with vaginal discharge. Patients with blood-stained vaginal discharge/polyps were excluded. The sampling technique was simple and convenient. After taking informed consent, a proforma was filled which included history and examination details on vaginal discharge. Based on the type of discharge, treatment was prescribed without HVS which was cost and time-effective. Patients were followed up at 4 and 6 weeks to evaluate response.

RESULTS: Out of 150 patients, 128 (85.3%) were non pregnant& 22 females (14.7%) were pregnant. Maximum patients 25(16.7%) were 28 years. The color of vaginal discharge was greyish white in (32.0 %), curdy white in 56 (37.3%) followed by yellow-green in (13.3%). Positive culture on High vaginal swab was seen in 55(36.7%) with Candida Albicans in 32 (21.3%) while Gardeneralla vaginalis was seen in 8(5.3%) patients. Negative culture reports were obtained in 95 patients (63.3%). Statistical analysis was done by SPSS 21.

CONCLUSION: This research suggests that syndromic management may be helpful as a first-line treatment for vaginal discharge especially in cases where facilities for high vaginal swabs are not available as this needs extensive lab equipment and setup. The patient's response was assessed.

KEYWORDS: Vaginal discharge, high vaginal swab, sensitivity, clinical, syndromic, treatment, culture.

This article may be cited as: Kumari K. Role of Syndromic Treatment as a Cost-effective Approach for Vaginitis at a Tertiary Care Hospital. J Liaquat Uni Med Health Sci. 2021;20(05):294-9. doi: 10.22442/jlumhs.2021.00879

INTRODUCTION

Reproductive health including sexually transmitted infections is an important area & increasing public awareness has resulted in increased reported prevalence worldwide. This led to the emergence of new diagnostic techniques for better management of these infections. Despite these advancements, a huge burden of new cases occurs annually and the investigative diagnosis is limited by socioeconomic factors[1].

The mild complaint of episodic and recurrent vaginal discharge is quite distressing for females of all ages. If it remains untreated, the ascending vaginal infection leads to a pelvic inflammatory disease that has long-term complications like infertility[1].

Trichomonas, Chlamydia, Gonorrhea, and Bacterial vaginosis (Gardnella vaginalis)are the organisms responsible for causing inflammatory vaginal discharge distressing the females. Mostly, a diagnosis is formed based on the clinical characteristics and laboratory tests available for each type of discharge like Bacterial vaginosis can be diagnosed clinically using Amsel criteria or Nugent's score. The laboratory equipment and chemical reagents all are quite expensive and treatment is delayed till the results are available[2].

Physiological vaginal discharge has a strong correlation to the menstrual cycle and should be differentiated from pathological discharge so that costly investigations and treatments are not prescribed. A normal colorless and odorless discharge increases in the proliferative phase just before ovulation and in normal pregnancy under the influence of pregnancy hormones[3].

The World Health organization had planned guidelines on Syndromic management which is a cost-effective remedy that is based on prescribing treatment based on visual inspection of the vaginal discharge without laboratory confirmation. This is a cost-effective, time-saving approach for third world countries & prevents transmission to the partner. The main presenting complaints of patients with vaginal discharge include lower abdominal pain and genital ulcer which is attempted to treat by prescribing suitable antibiotics. This cost-effective approach could be easily given to rich and poor women without discrimination. The biggest disadvantage of this treatment is the failure of prediction of the type of STI leading to suboptimal treatment[4].

The current guidelines do not recommend taking HVS on the first episode of vaginal discharge. Among reproductive-aged females between 20 to 30 years,

the commonest cause of pathological vaginal discharge is Bacterial vaginosis followed by Candidiasis which differs in their clinical presentation and the treatment is given accordingly without HVS. In certain indications, microbiological confirmation is mandatory before treatment like recurrent vaginal discharge (≥4 episodes per year**),** recurrent candidiasis, group B streptococcal infections, post-partum infections, post-instrumentation infections, vaginitis without discharge, and previous treatment failure. These cases must be scrutinized and proper lab investigations to be done[5].

Pathological vaginal discharge can occur in pregnancy as well and should be rationally treated in the first instance without waiting for the results as it is associated with adverse pregnancy outcomes like spontaneous abortion, ectopic pregnancy**.** The ones mostly causing harmful fetal effects include preterm delivery, low birth weight, stillbirth, postpartum sepsis, and congenital infection. These are caused by Chlamydia trachomatis, N. gonorrhea, and Bacterial vaginosis. Neonatal pneumonia and ophthalmic neonatorum can occur in infants if their mothers contracted Chlamydia trachomatis in pregnancy[6].

One of the essential components of the healthy well-being of males and females is to have sound reproductive health. And when this health harmony is jeopardized, both males and females face the threats of reproductive tract infections, especially STI. These can be transmitted from an infected partner to the unexposed and susceptible partner who will eventually suffer from these infections. The clinical presentations of STIs can range from lower abdominal pain, burning micturition, dyspareunia, vaginal &urethral discharge. The STIs are responsible for causing short-term complications as well as chronic impairments which include infertility, chronic pelvic pain, pelvic inflammatory disease (PID), tubal factor infertility & ectopic pregnancy. These are an important concern for third-world countries like us because a large budget of the economy needs to be spent on managing these complications[7].

METHODOLOGY

This descriptive and cross-sectional research was conducted at Creek general hospital, UMDC. The sampling technique was simple, convenient. Data was collected from the outpatient department of obstetrics and gynecology. The study period was from September 2017 till December 2018.

Patients were recruited after history, gynecological per speculum examination, and bimanual examination. A detailed history on the symptomatology of vaginal discharge like

Vulvovaginal itching; offensive discharge& pain in the lower abdomen was taken. A wet mount& High vaginal swab was taken for confirmation of infection in cases of recurrent vaginal discharge or resistance to treatment and this was the basis of its cost-effectiveness. Informed consent was taken.

A detailed proforma was filled which indicated age, parity, gestational amenorrhea (in pregnant females), mode of delivery including the number of miscarriages with special emphasis on induced ones& verbal description of vaginal discharge. like color, quantity, and presence of an ulcer, and its associated complaints like backache followed by confirmation of findings by per speculum vaginal examination

After introducing an unlubricated bivalve Cusco vaginal speculum and clear visualization of the cervix the vaginal discharge was examined. The high vaginal swab was taken on a dry, sterile swab stick for culture and sensitivity in cases of recurrent vaginal discharge. Based on vaginal discharge like for candidiasis, antifungal pessaries in pregnancy while the oral antifungal drug was prescribed in non-pregnant females. For Bacterial vaginosis, clindamycin was prescribed while Trichomoniasis was treated with metronidazole. In cases of positive swab tests, the sensitive drug was prescribed.

Laboratory investigations included Hb%, TLC, and ESR to assess the severity of infection. Random blood sugars were done to exclude Diabetes mellitus. At Creek general hospital, these labs are done free of cost making syndromic treatment in our domain a cost -effective approach.

All pregnant & non-pregnant females between 18-45 years with the complaint of vaginal discharge associated with dyspareunia, dysmenorrhea, and pain in the lower abdomen were considered for this research.

All patients presenting with blood-stained vaginal discharge, post-coital bleeding, and gynecological problems like polypoidal endometrial polyps and third-degree uterovaginal prolapse were excluded from the study. The exclusion criteria were strictly followed to avoid confounding variables.

This research was designed to conform to our observations that vaginal discharge can be treated without doing a high vaginal swab at the first instance.

RESULTS

Out of enrolled 150 patients, 128 patients (85.3%) were nonpregnant while 22 (14.7%) were pregnant.

The age range of all the patients both pregnant and non-pregnant was 16 to 47 years. Maximum women 25(16.7%) were 28 years while17 patients (11.3%) were 35 years and 16 patients (10.7%) were 29 years old. (**Figure I**)

Out of 150 patients, 107(71.3%) had delivered vaginally while 26(17.3%) had delivered by lower segment cesarean section.

The color of vaginal discharge was greyish white in 48 patients (32.0%), curdy white in 56 patients (37.3%) patients followed by yellow-green discharge in 20 (13.3%), and yellow and green discharge in 13(8.7%)

patients. (**Table I**)

As per the type of vaginal discharge, curdy white discharge was seen in 54 (36.0%) followed by homogenous dirty white discharge in 37(24.7%), pus-like in 30 (20.0%), and frothy in 29(19.3%).

The consistency of vaginal discharge was thick in 104 women (69.3%), thin in 37 (24.7%), and homogenous in 9(6.0%). (Table I)

As far as associated symptoms of vaginal discharge are concerned, vaginal itching was present in 96 patients (64.0%) while it was absent in 54 (36.0%). (**Table II**).

Another symptom dyspareunia was seen in 133 (88.7%) while it was absent in17 women (11. 3%). Cervical erosion was present in 102(68%) while it was absent in 48 (32.0%) women. (Table II)

The complaint of dysmenorrhea secondary to pelvic congestion because of vaginal discharge was seen in 121patients (80.7%) while it was absent in 7 (4.7%) patients. (Table II)

As far as the effects of vaginal discharge on the menstrual cycle are concerned, the majority of the patients up to 87 (58%) had a normal cycle while there were prolonged days of bleeding in 25 (16.7%).

Positive cultures on High vaginal swabs are seen in 55(36.7%) while 95 patients (63.7%) had negative culture reports. In positive cultures on High vaginal swab, the most frequently cultured organism was candida Albicans in 32 (21.3%) patients while Gardeneralla vaginalis was seen in 8(5.3%) patients. (**Figure II**) The rest included Escherichia coli, staphylococcus aureus, and mixed bacterial flora.

Statistical analysis:

The results were analyzed and presented as Descriptive statistics on SPSS 21 and the qualitative variables of this research are presented as frequencies and percentages.

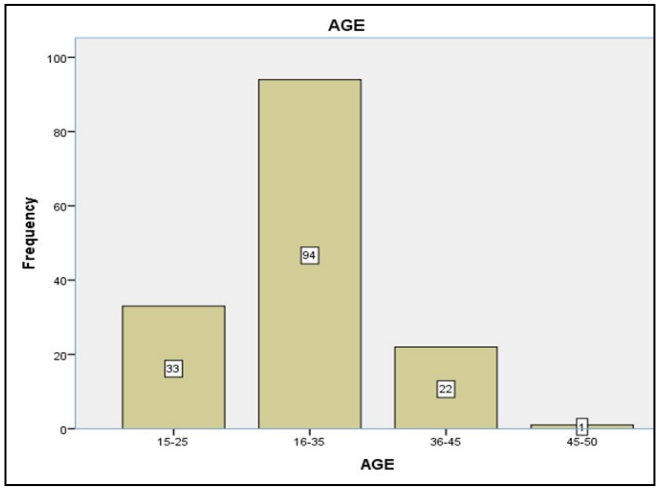
TABLE I:
CHARACTERISTICS OF VAGINAL DISCHARGE

	Frequency	Percent	Valid percent
Color Vaginal Discharge			
Yellow	13	8.7	8.7
Green	13	8.7	8.7
Curdy white	56	37.3	37.3
Greyish white	48	32.0	32.0
Yellow green	20	13.3	13.3
Type of vaginal discharge			
Pus like	30	20.0	20.0
Frothy	29	19.3	19.3
Homogenous	37	24.7	24.7
Curdy	54	36.0	36.0
Consistency of vaginal discharge			
Thin	37	24.7	24.7
Thick	104	69.3	69.3
Homogenous	9	6.0	6.0
Total	**150**	**100.0**	**100.0**

TABLE II:
SYMPTOMATOLOGY OF VAGINAL DISCHARGE

	Frequency Yes	Percent Yes	Valid percent
Vaginal Itching			
Yes	96	64.0	64.0
No	54	36.0	36.0
Dyspareunia			
Yes	133	88.7	88.7
No	17	11.3	11.3
Backache			
Yes	143	95.3	95.3
No	7	4.7	4.7
Cervical erosion			
Yes	102	68.0	68.0
No	48	32.0	32.0
Adnexal tenderness			
Yes	87	58.0	58.0
No	63	42.0	42.0
Uterine tenderness			
Yes	99	66.0	66.0
No	51	34.0	34.0
Total	**150**	**100.0**	**100.0**

FIGURE I: AGE OF THE PATIENTS

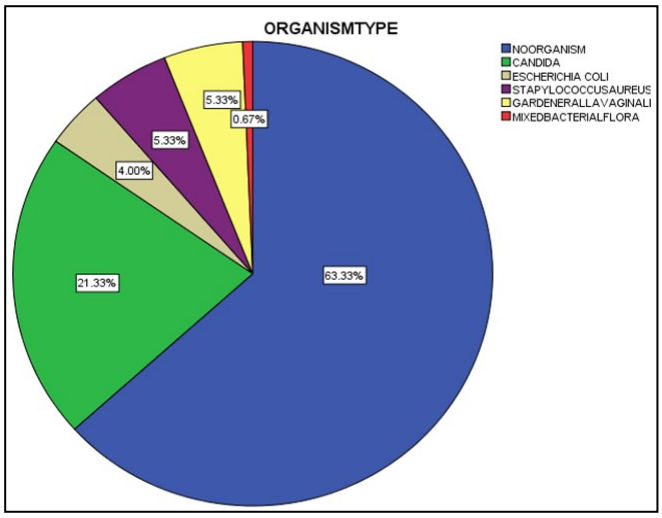


DISCUSSION

Abnormal vaginal discharge occurs commonly among women with bacterial vaginosis, candidiasis, trichomoniasis, chlamydia, and gonorrhea & may be associated with pelvic inflammatory disease, infertility, ectopic pregnancy, chronic pelvic pain, and 2–3 fold increased risk of HIV acquisition

With regards to the adequacy of syndromic management for vaginal discharge syndrome, a study conducted in Zimbabwe found that 57.5% of women who reported symptoms had a pathogen covered by a

FIGURE II:
TYPE OF ORGANISMS ON HVS CULTURE



combination treatment of kanamycin, doxycycline, and metronidazole. This is similar to the research conducted at CGH where the majority of the patients were given doxycycline and metronidazole with good responses. However, like in the study conducted in Zimbabwe, there was an element of over treatment the same can also be presumed in our research[3].

Sivaranjini R et al. [8] in their study at Puducherry, India recruited women from OPD revealed that 27 out of the 400 women (6.75%) with vaginal discharge had infection with T. vaginalis by the culture & frothy discharge was observed in only 25.9%, but this was the most specific sign with a positive predictive value of 100%. In our study, frothy discharge was found in 19.3% of women which is lower than this research.

Women with T. vaginalis infection have a significantly higher risk of pelvic inflammatory disease (PID) than women without Trichomoniasis. Adnexal tenderness, as evidence of PID, was present in 40.7% of patients, which was significantly higher than that seen in women without Trichomoniasis. The incidence of adnexal tenderness in our study is 58.0% higher than in the Indian research[8].

It is Candida albicans (C. Albicans) which is responsible for 90% of vaginal fungal infections (i.e. Candida vaginitis), non-albicans species are the main cause of recurrence and chronicity. Investigations have revealed that the prevalence of Candida vaginitis varies according to geographical location, hygiene practices, cultural and social factors, as well as the diagnostic methods used. The reported disease prevalence is 12.2% in Brazil, 18.7% in Israel, 12.1% in Athens, 17.4% in Turkey, 20.4% in India, and 6.5% in China. According to the results of our research, the most prevalent infection is Candidiasis[9].

The frequency of T. vaginalis infection in this study was lower than in Zimbabwe where a prevalence of 9.5% was found, but it is consistent with the reported prevalence of 5% in the Pakistan region[10].

In the study by Ahmad A 2009[11], redness and irritation of the vagina were the most prominent complaint and this correlated with positive discharge cultures. Likewise, Stovall TG et al.[12] considered redness and irritation of the vulva and vagina, pustulopapular lesions, and chunky white secretions to be symptoms of the disease. In our study, vaginal itching and curdy white discharge were seen which is similar to the above study; the most cultured organism was Candida Albicans[13].

There is a higher predisposition of pregnant women to develop Candidiasis with a high rate of Candida species isolation in both symptomatic and asymptomatic women with a prevalence of up to 36–37%. Infections are more likely in the third trimester than in other periods, this is similar to our study where a high prevalence (21.33%) was seen among pregnant & non-pregnant patients[14].

Abnormal vaginal discharge is associated with Bacterial vaginosis, Candida spp., and Trichomonas vaginalis; however consistent with other studies in pregnant and nonpregnant women, nearly 50% of pregnant women with BV were asymptomatic which is similar to our study[15].

Chauhan V 2014[16] detected bacterial vaginosis in 29.2%, C. Albicans in 11.5%, and T. vaginalis in 3.8% sexually active females with vaginal discharge. Similarly, Shah M et al found that of 183 cases diagnosed clinically as vaginal discharge syndrome, 38 (20.7%) were positive by laboratory investigations[17]. Ray K et al.[18] reported high sensitivity of the syndromic approach for vaginal discharge syndrome, but the specificity of this method in diagnosing Vaginal discharge was low. Another study done in sub-Saharan Africa found no significant associations between patient-reported STIs symptoms and laboratory-confirmed STI tests. This could be due to the over-diagnosis of STI[19].

In the cross-sectional study of women in rural Haiti with vaginal symptoms, approximately 1 in 11 women had a curable STI and more than 3 times that had bacterial vaginosis or candidiasis. Chlamydial infection was the most common STI and bacterial vaginosis was the most common vaginal condition. These results are in contrast to our study where the most prevalent organism is candida[20].

Results of the research are quite similar to the study in Haiti where among 206 women, 174 (84%) presented with vaginal discharge, 165 (80%) with vaginal itching, 123 (60%) with vaginal pain or dysuria[20].

The reproductive health of women is highly affected by protracted vaginal discharge leading to pelvic inflammatory disease affecting the quality of life and hence a need for primary awareness programs. Syndromic treatment revolves around the treatment of symptoms and signs very suggestive of STIs without

expensive investigations. Missing asymptomatic infections and unnecessary treatment with antimicrobials with poor sensitivity and specificity for the infection failing treatment are certain limitations[21].
The syndrome-based management of STIs is easy to implement in resource-poor, developing countries. This fact favors our research as well where a huge number of patients with financial constraints were enrolled and benefited from seeing and treating management[1].
A study in Africa was conducted to find out an age threshold that best differentiated between women with treatable STI pathogens and those without. It was based on the hypothesis that older women were significantly less likely than younger women to be infected with STI pathogens but no optimal age threshold can be accurately differentiated. The research conducted at CGH also favors this observation[22].
One of the research articles identified that the vaginal discharge flowcharts for the diagnosis of the type of vaginal discharge were effective for Bacterial vaginosis and Trichomoniasis but not for Chlamydia Trachomatis and Neisseria Gonorrhea. These findings are consistent with our research[23].

CONCLUSION

It is concluded from the above research that they see and treat policy of managing vaginal discharge can be quite beneficial in terms of cost-effectiveness especially at Creek General hospital where women belong to low socioeconomic strata. So the patient is not overburdened by the cost of HVS. This is a less time-consuming strategy with prompt treatment and patient-friendly; the disadvantage is overtreatment.
The syndromic management can also benefit localities where advanced laboratories with high technology equipment are not available. Syndromic management is recommended by WHO and NACO.

Ethical permission: United Medical & Dental College ERC Letter No. UMDC/IRB-Ethics/2017/01/08/277, dated: 01-08-2017.

Conflict of Interest: There is *no* conflict of *interest among the authors.*

Financial Disclosure / Grant Approval: There was no funding agency.

DATA SHARING STATEMENT: The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions

AUTHOR CONTRIBUTIONS

Kumari K: The author confirms sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

REFERENCES

1. Ghosh I, Paul B, Das N, Bandyopadhyay D, Chakrabarti MK. Etiology of vaginal/cervical discharge syndrome: Analysis of data from a referral laboratory in eastern India. Indian J Dermatol. 2018; 63(6): 484-89. doi: 10.4103/ijd.IJD_296_18.
2. Orish VN, Ofori-Amoah J, François M, Silverius BK, Mensah EK. Microbial and Antibiotic Sensitivity Pattern of High Vaginal Swab Culture Results in Sekondi-Takoradi Metropolis of the Western Region of Ghana: Retrospective Study. Eur J Clin Biomed Sci. 2016; 2(5): 45-50. doi: 10.11648/j.ejcbs.20160205.13.
3. Chirenje ZM, Dhibi N, Handsfield HH, Gonese E, Barr BT, Gwanzura L et al. The etiology of vaginal discharge syndrome in Zimbabwe: results from the Zimbabwe STI etiology study. Sex Transm Dis. 2018; 45(6): 422-428. doi: 10.1097/OLQ.0000000000000771.
4. Vallely LM, Toliman P, Ryan C, Rai G, Wapling J, Gabuzzi J et al. Performance of syndromic management for the detection and treatment of genital Chlamydia trachomatis, Neisseria gonorrhoeae and Trichomonas vaginalis among women attending antenatal, well-woman and sexual health clinics in Papua New Guinea: a cross-sectional study. BMJ Open. 2017; 7(12): e018630. doi: 10.1136/bmjopen-2017-018630.
5. Barnes P, Vieira R, Harwood J, Chauhan M. Self-taken vaginal swabs versus clinician-taken for detection of candida and bacterial vaginosis: a case-control study in primary care. Br J Gen Pract. 2017; 67(665): e824-29. doi: 10.3399/bjgp17X693629.
6. Masha S, Wahome E, Vaneechoutte M, Cools P, Crucitti T, Sanders EJ. High prevalence of curable sexually transmitted infections among pregnant women in a rural county hospital in Kilifi, Kenya. PLoS One. 2017; 12(3): e075166. doi: 10.1371/journal.pone.0175166.
7. Thomas PP, Yadav J, Kant R, Ambrosino E, Srivastava S, Batra G et al. Sexually transmitted infections and behavioral determinants of sexual and reproductive health in the Allahabad District (India) based on data from the ChlamIndia study. Microorganisms. 2019; 7(11): 557. doi: 10.3390/microorganisms7110557.
8. Sivaranjini R, Jaisankar TJ, Thappa DM, Kumari R, Chandrasekhar L, Malathi M et al. Trichomoniasis: How do we diagnose in a resource-poor setting? Indian J Sex Transm Dis AIDS. 2013; 34(1): 25-31.
9. Khan SA, Amir F, Altaf S, Tanveer R. Evaluation of common organisms causing vaginal discharge. J Ayub Med Coll Abbottabad. 2009; 21(2): 90-3.
10. Tine RC, Sylla K, Ka R, Dia L, Sow D, Lelo S et al. A study of Trichomonas vaginalis infection and

correlates in women with vaginal discharge referred at Fann Teaching Hospital in Senegal. J Parasitol Res. 2019; 2019: 206972. doi: 10.1155/2019/2069672.
11. Ahmad A, Khan AU. Prevalence of candida species and potential risk factors for vulvovaginal candidiasis in Aligarh, India. Eur J Obstet Gynecol Reprod Biol. 2009; 144(1): 68-71. doi: 10.1016/j.ejogrb.2008.12.020.
12. Stovall TG, Ling FW, Nikki BZ, Chuang AW, Tillmanns TD, eds. Gynecology for the Primary Care Physician. 2nd ed. Philadelphia: Current Medicine Group, 2007:137-40.
13. Ebrahimy F, Dolatian M, Moatar F, Majd HA. Comparison of the therapeutic effects of Garcin® and fluconazole on Candida vaginitis. Singapore Med J. 2015; 56(10): 567-72.
14. Makanjuola O, Bongomin F, Fayemiwo SA. An update on the roles of non-albicans Candida species in vulvovaginitis. J Fungi (Basel). 2018; 4 (4): 121. doi: 10.3390/jof4040121.
15. Joyisa N, Moodley D, Nkosi T, Talakgale R, Sebitloane M, Naidoo M et al. Asymptomatic bacterial vaginosis in pregnancy and missed opportunities for treatment: a cross-sectional observational study. Infect Dis Obstet Gynecol. 2019; 2019: 7808179.
16. Chauhan V, Shah M, Thakkar S, Patel SV, Marfatia Y. Sexually transmitted infections in women: A correlation of clinical and laboratory diagnosis in cases of vaginal discharge syndrome. Indian Dermatol Online J. 2014; 5(Suppl 1):S1-S5.
17. Shah M, Deshmukh S, Patel SV, Mehta K, Marfatia Y. Validation of vaginal discharge syndrome among pregnant women attending obstetrics clinic, in the tertiary hospital of Western India. Indian J Sex Transm Dis. 2014; 35:118-23.
18. Ray K, Muralidhar S, Bala M, Kumari M, Salhan S, Gupta SM et al. Comparative study of syndromic and etiological diagnosis of reproductive tract infections/sexually transmitted infections in Delhi. Int J Infect Dis. 2009; 13(6): e352-9. doi: 10.1016/j.ijid.2008.11.021.
19. Aggarwal P, Bhattar S, Sahani SK, Bhalla P. Utility of laboratory diagnosis for conf women in irmation of the syndromic case management in married Indian women with vaginal discharge. Int J Health Sci. 2016; 10(4): 516-21.
20. Bristow CC, Desgrottes T, Cutler L, Cutler D, Devarajan K, Ocheretina O et al. The aetiology of vaginal symptoms in rural Haiti. Int J STD AIDS. 2014; 25(9): 669-75. doi: 10.1177/0956462413516300.
21. Mahmood MA, Saniotis A. Use of syndromic management algorithm for sexually transmitted infections and reproductive tract infections management in community settings in Karachi. J Pak Med Assoc. 2011; 61(5): 453-7.
22. Kufa T, Gumede L, Maseko DV, Radebe F, Kularatne R. The demographic and clinical profiles of women presenting with vaginal discharge syndrome at primary care facilities in South Africa: Associations with age and implications for management. South Afr Med J. 2018; 108(10): 876-880. doi: 10.7196/SAMJ.2018.v108i10.13027.
23. Zemouri C, Wi TE, Kiarie J, Seuc A, Mogasale V, Latif A, et al. The Performance of the Vaginal Discharge Syndromic Management in Treating Vaginal and Cervical Infection: A Systematic Review and Meta-Analysis. PLoS One. 2016; 11 (10): e0163365.

AUTHOR AFFILIATION:

Dr. Kaweeta Kumari
Associate Professor
Department of OBGYN
United Medical & Dental College
Creek General Hospital
Ibrahim Hyderi, Korangi
Karachi, Sindh-Pakistan.
Email: kaweetadhomeja@gmail.com