wjpmr, 2023,9(10), 267-270

SJIF Impact Factor: 5.922

WORLD JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.wjpmr.com

Case Report

ISSN 2455-3301

WJPMR

OPPORTUNISTIC FUNGAL URINARY TRACT INFECTION: A CASE REPORT

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Article Received on 22/08/2023 **Article Revised on 12/09/2023** **Article Accepted on 02/10/2023**

ABSTRACT

Candida species are opportunistic pathogens that can cause urinary tract infections (UTIs), especially in individuals with underlying risk factors. Fungal infection that affects women worldwide, commonly vaginal candidiasis, is primarily caused by an overgrowth of the *Candida albicans*, in the vaginal area. This case presentation discusses a unique case of *Candida* UTI in an Indian patient, highlighting the clinical features, diagnostic challenges, and treatment strategies. In this article we aim to explain a significant relationship between weakened immunity and vaginal candidiasis through a case study approach. It also discusses the underlying causes of impaired adaptive immunity which is not limited to diabetes, HIV/AIDS, immunosuppressive treatments, and genetic predisposition. Timely diagnosis and appropriate management, including antifungal therapy and addressing underlying conditions, are crucial for successful outcomes. The present study demonstrated that NLR level is elevated in *Candida* infection and can be used as a reflection of systemic inflammatory response in vaginosis patients.

INTRODUCTION

Vulvovaginal Candidiasis (VVC), often colloquially referred to as a yeast infection, is a commonly encountered gynecological condition. It is caused by an overgrowth of the fungus *Candida*, primarily *Candida albicans*, in the vaginal environment. *Candida albicans* remains the most common causative agent in India, but there is an increasing trend of non-albicans *Candida* species, including *Candida glabrata*, *Candida tropicalis*, *Candida krusei* and *C. parapsilosis*.[1] Approximately, 75% of women will experience at least one episode of VVC in their lifetime.[2] This condition affects millions of women worldwide and presents with a range of uncomfortable symptoms, including vulvovaginal itching, burning, abnormal vaginal discharge, and discomfort during sexual intercourse (Figure 1).[3]

Risk factors for VVC are similar to those worldwide and include diabetes mellitus, antibiotic use, pregnancy, poor genital hygiene, and immunosuppression (Figure 1). While vaginal candidiasis is generally not considered a serious medical condition, its prevalence and potential for recurrence make it a subject of significant clinical interest.[4] Moreover, the impact of this condition extends beyond physical discomfort, often affecting a woman's quality of life and emotional well-being.[5]

In this case report, we present the clinical details and management of a patient diagnosed with vaginal candidiasis. The report highlights the importance of accurate diagnosis, appropriate treatment strategies, and the need for considering underlying factors that may contribute to recurrent infections. By examining this real-life case, we aim to contribute to the body of knowledge regarding the diagnosis and management of vaginal candidiasis, with a focus on personalized patient care. This case underscores the importance of a holistic approach in understanding, diagnosis and treating this common gynecological condition, ultimately enhancing patient outcomes and well-being.

CASE PRESENTATION

A 45-year-old Indian female presented to Government Hospital, Himachal Pradesh with the complaint of vaginal discomfort. She reported to have a thick, white, curd- like discharge and severe itching from few days in the vulvovaginal area. During her previous examinations, the cervix and other genital regions appeared normal in size but she experienced unusual bouts of thick cloudy discharge from her endocervical canal. Thus, she was clinically diagnosed with Vaginal Candidiasis.

Her vitals included 80 beats per minute, BP 110/70 mm Hg, sp02 level 99%. She has a normal appetite and no problem with her bowel movements and passing the stools but a frequent urge to urinate. She has 2 children with no history of abortion and her last period was a month ago.

The physical examination of urine yielded a pale-yellow coloured, clear urine with a specific gravity value of 1.025 which is slightly higher than the normal range. Patient's complete blood count profile revealed low values of Hb 9.2 g/dl and a considerably higher than normal NLR ratio of 9. The serum creatinine was found to be a bit low value of 0.5 mg/dl.

The patient was found to be negative for HIV, HCV, Hbs Ag and VDRL Test. Her random blood sugar level was found to be 81mg/dl lower than the normal range of 90-140 mg/dl. The direct and indirect bilirubin level of the patient was found to fall within the normal range. But the level of serum alkaline phosphatase which was found to be 167 IU/L was much higher than the normal range of 46 - 116 IU/L. The serum Albumin to Globulin ratio was found to be 3.55 higher than the normal range (1.5-2.5 :1). The patient was prescribed Clingrace CL Vaginal tablets for six days, Forcan 150mg tablet weekly, Doxycycline capsule 100mg for 14 days and to apply Candid ointment in the clean infected area.

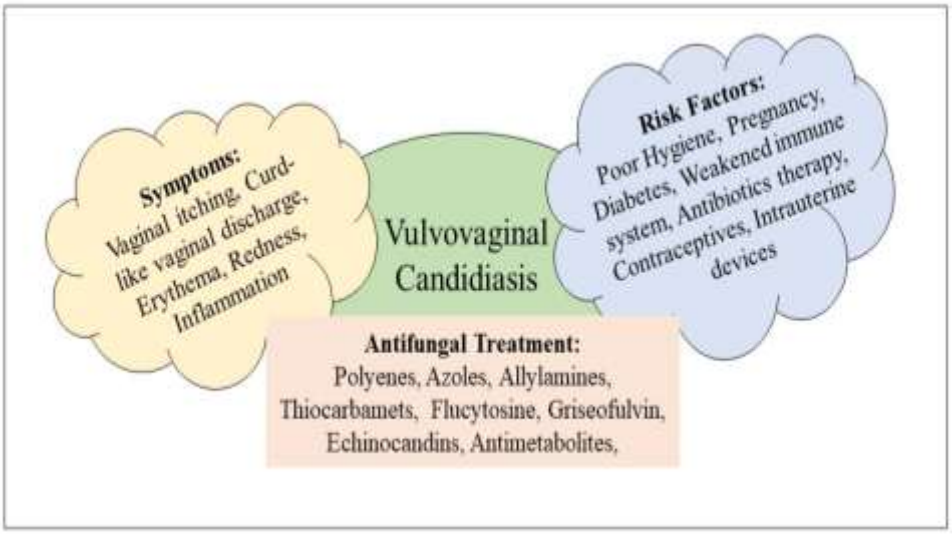

Figure 1: Vulvovaginal Candidiasis symptoms, risk factors, antifungal treatment.

Table 1: Complete Blood Count report.

Complete Blood Count:	Result	Normal Range
Haemoglobin (Hb)	**9.2 g/dl**	Female:12-15 g/dl
Total Erythrocyte Count	3.73 million cells/cu mm	Women: 3.8 – 4.8 million cells/cu mm
MCV	90.4 fl	75-95 fl
MCH	**24.6 pg**	26-32 pg
MCHC	**27.2 g/dl**	31-35 g/dl
Total Leukocyte Count	5,500cells/cu mm	4-11 x 10^3 cells/cu mm
Neutrophils	**86.3%**	40-75%
Lymphocytes	**9.6%**	20-40%
Monocytes	4.1%	2-10%
Platelet Count	2.76 Lakh/*cu* mm	1.50-4.50 *Lakh*/cu mm
PCV	**33.7 %**	36-47 (%)

Table 2: Renal/Kidney Function Test.

Test parameter	Result	Normal Range
Blood Urea	24 mg/dl	14-40 mg/dl
Serum Creatinine	**0.5 mg/dl**	Female: 0.55-1.02
Serum Uric acid	5.7 mg/dl	2.4 – 6.0

Table 3: Liver Function Test.

Test parameter	Result	Normal Range
Serum Bilirubin Total	0.5mg/dl	0.2-1.0mg/dl
Serum Bilirubin Direct	0.1mg/dl	0.0-0.2 mg/dl
Serum Bilirubin Indirect	0.40mg/dl	0.1-0.9mg/dl
SGOT (AST)	28IU/L	0-40IU/L
SGPT (AST)	17IU/L	0-40IU/L
Serum Alkaline Phosphatase	**167 IU/L**	46-116IU/L
Serum Protein-Total	**5.0g/dl**	6.6-8.4g/dl
Serum Protein-Albumin	3.9g/dl	3.5-5.0g/dl
Serum Protein-Globulin	**1.10g/dl**	1.5-3.0g/dl
Serum Albumin/Globulin Ratio	**3.55**	1.5-2.5 :1

DISCUSSION

The main cause of vaginal candidiasis, often called a yea st infection, is an overgrowth of the fungus *Candida*, mo st frequently *Candida albicans*, in the vaginal area. They are regarded as opportunistic microbes that only result in infections under favourable environment and in particular clinical circumstances. The factors that can increase the risk of contracting the *Candida* infection can be categorised into immunological and non-immunological. Whereas the immunological factors may include weakened immune system, immunocompromised conditions like HIV, being on an immunosuppressive therapy, the non-immunological factors include balanced diet, environmental conditions like humidity, temperature and in addition to that hygiene sometimes plays a key role.[6]

The patient's complete blood count profile (Table 1) revealed a low haemoglobin value of 9.2 g/dl indicating a slightly anaemic condition, while other red blood cell indices were within the normal range. The total leukocyte count was 5,500 cells/cu mm, with an elevated neutrophil-to-lymphocyte ratio (NLR) of 9, suggesting an inflammatory response reported in Pek et al.[7] The neutrophil-to-lymphocyte ratio (NLR) is a measure of inflammation and immune system activity. While the NLR is a useful marker in various medical conditions, including infectious diseases and inflammatory conditions, its specific role in VVC is not extensively studied.

The immune response to *Candida* infections generally involves various immune cells, including neutrophils and lymphocytes. Neutrophils are the first responders to infection and are involved in the initial inflammatory response, while lymphocytes play a role in the adaptive immune response.[8,9]

A physical examination of the patient's urine (Table 2) revealed a slightly higher specific gravity value of 1.025, which indicates that the body is dehydrated. The patient tested negative for serological tests like HIV, HCV, Hbs Ag, and VDRL contradicting all the possible conditions for being immunocompromised, but the level of serum alkaline phosphatase (Table 3) was elevated at 167 IU/L, indicating a possible liver problem or bone disorder. Furthermore, the serum albumin-to-globulin ratio was higher than the normal range indicating a weakened immune system.

The patient had been clinically diagnosed with Vaginal Candidiasis, but her blood reports did not show any significant sign of infection because of the immunocompromised state rather it indicated that because of her weakened adaptive immunity she acquired an opportunistic infection. The treatment given to the patient included Clingrace CL tablets, a combination of clindamycin (antibacterial) and clotrimazole (antifungal) for six days, Doxycycline 100mg for 14 days to avoid any susceptible bacterial infection, Forcan 150mg weekly and application of Candid Ointment to limit the growth of *Candida* by destroying the fungal cell membrane. The follow up with the patient showed that she was benefited with the treatment. The itching and thick vaginal discharge sensations disappeared.

The diagnosis of VVC is primarily based on clinical symptoms and laboratory tests specific to the condition. Timely diagnosis and appropriate management, including antifungal therapy and addressing underlying conditions, are crucial for successful outcomes. NLR in different aspects of VVC diagnosis or monitoring, but further studies are needed to establish its significance in this context. In Future, NLR can also be used as a useful marker in diagnosing or monitoring *Candida* infection.

ACKNOWLEDGEMENTS

We would like to acknowledge the patients who provided information as well as consent for the study.

Abbreviation

VVC: Vulvovaginal Candidiasis; NLR: Neutrophil to Lymphocyte Ratio.

Conflict of Interest

None.

Source of Funding

None.

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