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Original Research Article

CLINICAL PROFILE, ETIOLOGY AND MANAGEMENT OUTCOMES OF VAGINAL DISCHARGE IN ADOLESCENT GIRLS: A PROSPECTIVE OBSERVATIONAL STUDY

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ABSTRACT

Background: Vaginal discharge is a common gynecological complaint among adolescent girls, causing significant anxiety and impacting quality of life. However, data on its specific etiology and management outcomes in this age group are limited. **Aim:** To study the clinical presentation, determine the etiological factors, and assess the management outcomes of vaginal discharge in adolescent girls aged 10–19 years. **Materials and Methods:** A hospital-based prospective observational study was conducted over 18 months. A total of 120 adolescent girls presenting with complaints of vaginal discharge were enrolled. A detailed clinical history and examination were performed. Discharge was analyzed using fresh mount microscopy, Gram stain, and culture where indicated. Patients were treated according to syndromic management guidelines or specific diagnosis and followed up at 2 weeks and 1 month to assess resolution of symptoms. **Results:** The mean age of presentation was 16.5 years. The most common clinical profile included white, or curd-like discharge (58.3%) associated with itching (45%). The leading etiology was bacterial vaginosis (BV) (33.3%), followed by vulvovaginal candidiasis (VVC) (25.8%), and physiologic leucorrhea (20%). Trichomonas vaginalis was identified in only 5% of cases. Mixed infections were seen in 8.3% of patients. Poor perineal hygiene and the use of synthetic underwear were significant associated factors. Management outcomes revealed a complete resolution rate of 85% at first follow-up. Non-adherence to treatment and persistence of poor hygiene practices were the main reasons for recurrence (9.1%). **Conclusion:** Bacterial vaginosis and candidiasis are the predominant infective causes of vaginal discharge in adolescents. Syndrome-specific treatment yields high success rates. Health education regarding hygiene practices is crucial for preventing recurrence.

INTRODUCTION

Adolescence is a transitional phase characterized by physical, psychological, and hormonal changes. The onset of menarche and sexual maturation brings with it a vulnerability to reproductive tract infections (RTIs). Vaginal discharge is one of the most frequent complaints in adolescent gynecology outpatient departments.[1,5]

While a certain amount of physiological discharge is normal, pathological discharge can indicate infections like Bacterial Vaginosis (BV), Candidiasis, or Trichomoniasis. In adolescents, the etiology can differ from adults due to factors like an immature immune system, developing vaginal flora, lack of awareness about hygiene, and social taboos preventing timely consultation.[2,6]

Untreated infections can lead to complications such as pelvic inflammatory disease (PID), future infertility, and an increased risk of acquiring sexually transmitted infections (STIs).[7] There is a paucity of prospective data focusing exclusively on the adolescent age group in the Indian subcontinent. Studies have shown variable prevalence rates of specific pathogens, necessitating region-specific data.[4]This study aims to fill that gap by analyzing the clinical profile, specific causes, and response to treatment in this cohort.

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MATERIALSANDMETHODS

Study Design and Setting

This was a hospital-based prospective observational study conducted in the Department of Obstetrics and Gynecology at a tertiary care center in North India over a period of 18 months (January 2023 to June 2024).

Study Population

Adolescent girls aged 10 to 19 years presenting with the complaint of vaginal discharge were screened for inclusion.

Inclusion Criteria

Girls aged 10–19 years.

- Complaining of abnormal vaginal discharge (altered color, consistency, odor, or associated with itching/pain).
- Willingness to provide assent (and consent from parent/guardian).

Exclusion Criteria

- Girls currently menstruating at the time of examination (deferred until cessation of menses).
- Those on antibiotic or antifungal therapy in the preceding 2 weeks.
- Patients with diagnosed chronic illnesses (like diabetes mellitus) or those who were sexually active (as the study focused on general adolescent gynecology, though anonymity was maintained to avoid underreporting; sexual activity was noted if disclosed confidentially).

Methodology

After obtaining informed consent from parents and assent from the participants, a detailed history was taken regarding the duration, type, color, consistency, and odor of discharge; associated symptoms (itching, pain, dysuria); and general hygiene practices (type of underwear, washing techniques). A general physical and local examination was performed. A sterile speculum examination (using a narrow virginal speculum or Huffman speculum when necessary and possible) was attempted, but in most cases, high vaginal swabs were collected using a moist, sterile swab inserted through the hymenal opening without a speculum to avoid discomfort.

Laboratory Analysis

- Wet Mount Microscopy: A saline mount was examined immediately for Trichomonas vaginalis (motility), clue cells (indicating BV), and pus cells.
- 10% KOH Mount: Examined for fungal elements (pseudo hyphae or buds) to diagnose Candidiasis. The whiff test (amine odor) was also noted.
- Gram Staining: Performed to assess the vaginal flora and Nugent score for BV.
- Culture: Performed if specific organism identification was required or if initial microscopy was inconclusive.

Diagnosis Criteria

- Physiological Leucorrhea: Thin, milky white discharge with no pathogens, normal flora, and no pus cells.
- Bacterial Vaginosis: Amsel's criteria (at least 3 of 4: homogeneous discharge, clue cells >20%, pH >4.5, positive whiff test) or Nugent score >7.
- Candidiasis: Presence of pseudo hyphae on KOH mount or positive culture for Candida species.
- Trichomoniasis: Presence of motile trichomonads on saline mount.

Management and Follow-up:

Patients were treated according to the National STI/RTI syndromic management guidelines, which have been validated for high efficacy in vaginal infection (e.g., Clindamycin/Metronidazole for BV, Clotrimazole/Fluconazole for Candidiasis, and Metronidazole/Tinidazole for Trichomoniasis). They were advised on perineal hygiene practices. Follow-up was scheduled at 2 weeks and 1 month to assess clinical improvement (resolution or persistence of symptoms).

Statistical Analysis: Data were entered into Microsoft Excel and analyzed using SPSS version 22. Descriptive statistics (frequencies, percentages, mean) were used to present the data.

RESULTS

Demographic Profile

A total of 120 adolescent girls were enrolled. The mean age was 16.5 years. The majority (75%) were aged between 15 and 19 years. Most (70%) were school or college students.

Clinical Profile

- **Type of Discharge:** The most common presenting complaint was thick, white curdy discharge (35%), followed by thin white discharge (30%), and yellow/green discharge (20%).
- **Associated Symptoms:** Itching (45%) was the most common accompanying symptom, followed by burning sensation (25%), foul smell (18%), and lower abdominal pain (12%).
- **Hygiene Factors:** 60% of girls reported using synthetic underwear, and 40% admitted to improper washing/drying techniques. These factors were identified as potential contributors to the etiology.

The etiological distribution on microbiological analysis is depicted in table 1.

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Table1: Etiological Distribution

Etiology	Number of cases(n=120)	Percentage (%)
Bacterial Vaginosis 40 33.3	40	33.3
Vulvovaginal Candidiasis	31	25.8
Physiological Leucorrhea	24	20.0
Mixed Infections (BV + Candida)	10	8.3
Trichomonas vaginalis	6	5.0
Non-specific Vaginitis	5	4.2
Chemical/Irritant Dermatitis	4	3.3

Management Outcomes

- Resolution at 2 Weeks: Out of 120 patients, 102 (85%) reported complete resolution of symptoms at the first follow-up visit. This high rate of resolution is consistent with the expected efficacy of syndromic management.
- Persistence/Partial Response: 11 patients (9.1%) had persistent symptoms or recurrence within one month.
- Lost to Follow-up: 7 patients (5.8%) did not return for follow-up.
- Among those with recurrence, the primary reasons identified were incomplete course of antibiotics (4 cases) and persistent poor hygiene practices (7 cases), underscoring the importance of non-pharmacological interventions.

DISCUSSION

This prospective study provides a snapshot of the common causes and outcomes of vaginal discharge in adolescent girls. The mean age of presentation (16.5 years) aligns with the mid-adolescent period where hormonal changes are well-established.

Clinical Profile and Etiology

Our study found that Bacterial Vaginosis (33.3%) was the most common infective cause, followed closely by Vulvovaginal Candidiasis (25.8%). This finding is consistent with studies by Lanis et al. and Khadse&Deshmukh, who noted a shift in adolescent etiology from primarily physiological to BV as age increases, and that BV and VVC are the predominant microbial etiologies.[1,4] The high rate of BV in sexually inactive adolescents suggests that factors other than sexual transmission, such as douching, altered vaginal flora, and hygiene practices, play a significant role.[2]

The low prevalence of Trichomonas vaginalis (5%) in this study is expected, given that it is predominantly sexually transmitted, and our cohort was primarily drawn from a population that disclosed being non-sexually active (or were younger adolescents). However, clinicians must maintain a non-judgmental approach, as hidden sexual activity can be a cause.

Physiological leucorrhea (20%) still constituted a significant proportion, highlighting the need for reassurance and education for both the girl and her parents to alleviate anxiety regarding normal bodily functions.[5] The role of hygiene was evident in our study. Poor practices and the use of synthetic underwear were common among participants, a finding well-documented in the literature as a contributing factor to vulvovaginitis.[8,9,10]

Management Outcomes: The high rate of resolution (85%) following syndromic management validates the effectiveness of the current WHO and National guidelines in the adolescent population. This aligns with the systematic review by Zemouri et al., which confirmed the high performance of syndromic management for vaginal infections.[3] However, the recurrence rate of 9.1% emphasizes that "treatment" is not just pharmacological. The association of recurrence with poor hygiene practices suggests that counseling on wearing cotton underwear, correct wiping techniques (front to back), and avoiding harsh soaps is as important as the medication itself, a concept strongly supported by literature focusing on preventive behaviors.[10]

Limitations

The study was conducted in a single hospital setting, which may not represent the community burden. The inability to perform pH testing in all cases due to patient discomfort and reliance on syndromic management over specific cultures in some instances may have led to minor diagnostic inaccuracies. Furthermore, the sensitive nature of sexual history in this age group may have led to underreporting.

CONCLUSION

Vaginal discharge in adolescent girls is a common problem with a varied etiology. While physiological discharge is common, infections like Bacterial Vaginosis and Candidiasis predominate. The syndromic approach to management is highly effective in achieving clinical cure. However, addressing modifiable risk factors such as poor perineal hygiene is essential to prevent recurrence and improve the reproductive health of adolescents.

Clinical Message

Pediatricians and gynecologists should adopt a holistic approach to adolescent vaginal discharge, combining targeted medical therapy with sensitive counseling regarding hygiene and lifestyle modifications.

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