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Causes of Leukorrhea in Fasa, Southern Iran.

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Abstract:

Introduction: Vaginal Discharge (leukorrhea), is quite common in reproductive ages specially in sexually active women. Most encountered causes include bacteria, fungi and parasites. The purpose of this study was to determine the prevalence of different causes, precipitating factors and symptomatology of leukorrhea,

Materials and Methods: It is a descriptive cross sectional study performed in 12 months in Fatemia clinic (affiliated to Fasa Medical School, Fasa, Iran). Inclusion criteria was presence of leukorrhea in absence of pregnancy and vaginal bleeding. A questionnaire in addition to history and physical examination was completed for included cases. A direct smear, gram staining and culture was taken from the vaginal discharge.

Results: 1252 patients with average age of 31.7 ± 9.7 years (15-53 year old) were studied. 95% were married and 75% were multiparous. 12% were using condom for contraception. Neither had multipartners. Clinical manifestations included pruritus (57%), local irritation (30%), Dysparaunea (24%). Direct smear with normal saline (3% positive for Trichomoniasis), KOH (15% positive for Candida), gram staining (51% positive for gram positive cocci) and culture (82% positive for gram positive cocci) were performed.

Conclusion: Microbial vaginal discharge in sexually active women is less common in those who use condom for contraception and causes in order of prevalence are gram positive cocci, candida, Trichomoniasis, Gardenella Vaginalis and Gonorrhea.

Key Words: Leukorrhea, causes, risk factors, Fasa, Iran.

Introduction:

Leukorrhoea is one of the most common causes of referral to primary care or gynecology clinics. It is seen especially in reproductive ages, sexually active women and those with poor genital hygiene. Due to high prevalence of vaginal discharge in young ladies, this study was designed to investigate the causes of leukorrhoea in our community.

Vaginal normal flora includes Lactobacilli, some gram positive and negative, aerobic and anaerobic bacteria^(1, 2). Overgrowth of anaerobic bacteria and aminopeptidase production (which produces amines from decarboxylation of amino acids) will lead to foul smelling of the discharges⁽³⁾. Usually, 4 to 7 species grow in cultures taken from vaginal discharge⁽⁴⁾.

Trichomonas vaginalis is a flagellated protozoa, an strictly anaerobic organism that survives in a wide pH range, from markedly acidic 3.5 to alkaline 8.0. It was first described by Donne in 1836⁽⁶⁾. The organism was later documented as the cause of common infections in the lower genital canal in both males and females. There is a 50 percent chance that sexual partners will eventually exchange the parasite. The parasite is sensitive to drying effect and to atmospheric oxygen. Therefore, once having left the body, it will not survive beyond a few hours. It is believed that sexual intercourse is the most common source of transmission for this infection.

Vertical transmission is also known to occur. Non-sexual transmission is theoretically possible, owing to the organism's survival in moist secretions; however, this is likely to be an exceptional means of acquisition. The infection may lie dormant for months or years.

Trichomonas vaginalis has a worldwide distribution. The prevalence ranges from 5 percent to more than 50 percent in different populations⁽⁵⁾. World health organization estimates that 180 million trichomoniasis infections are acquired annually worldwide⁽²³⁾. The factors associated with high prevalence are the same as for sexually transmitted diseases; poor personal hygiene, multiple sexual partners, and low socio/economic status.

Candida albicans is seen in about 20% of non-pregnant women aged 15 to 55 in the vagina but most have no symptoms and it is harmless to them. Overgrowth of vaginal yeasts causes a heavy white curd-like vaginal discharge, a burning sensation in the vagina and vulva and/or an itchy rash.

Nearly 75% of all adult women have had at least one episode of vaginal Candidiasis in their lifetime⁽²⁴⁾. On rare occasions, men may also experience genital candidiasis. Overgrowth of candida occurs most commonly with pregnancy, high dose combined oral contraceptive pill and oestrogen-based hormone replacement therapy, a course

of broad spectrum antibiotics such as tetracycline or coamoxiclav, Diabetes, Iron deficiency anaemia, immunological deficiency (e.g. HIV infection, corticosteroid therapy, etc.).

Gardenella Vaginalis is a vaginal normal flora which causes bacterial vaginosis following overgrowth caused by change in vaginal pH (e.g., because of vaginal douche), frequent intercourse and multiple sexual partners⁽²⁵⁾. The vaginal discharge is watery, gray or yellow, heavy and foul smelling. *Gardenella vaginalis* is quite common and is reported from all regions of the world⁽²⁷⁾.

Gonorrhoea: It is caused by gram negative diplococci, *N gonorrhoea*. The United States center for disease control and prevention (CDC) estimates that more than 700,000 persons in the U.S. get new gonorrhoeal infections each. It is estimated that 75 percent of all reported cases of gonorrhoea are found in younger persons (aged 15 to 29 years). The highest rates of infection are usually found in 15 to 19 year old women and 20 to 24 year old men⁽⁸⁻⁹⁾. Pregnant mothers infected with gonorrhoea, can transmit the disease to their babies during childbirth. Gonococcal conjunctivitis is a major preventable cause of blindness in newborns⁽¹⁰⁾.

Materials and Methods:

During 12 months in 2005 and 2006, 1252 women from those who referred to Fasa Medical School affiliated primary care or gynecology clinics due to vaginal

discharge were studied. The exclusion criteria were pregnancy and abnormal vaginal bleeding. It is a descriptive cross sectional study.

The questionnaire used in the study contained age, method of contraception, symptoms, description of the secretions and average number of sexual contacts in a week. Standard history taking and physical examination has been done, and then using sterile vaginal speculum and swab, insertion and sample taking have been done. Three smears have been spread for each patient: one with normal saline (to see *Trichomonas vaginalis* or clue cell), one with 10% KOH (for Sniff test and microscopic examination for *Candida Mycelium*) and the third one for Gram staining. Cultures were also performed using Eosin Methylene Blue Agar (EMB), Blood Agar and Thayer-Martin Agar⁽¹³⁾. Antibiogram was done for positive culture results.

Results:

Number of studied patients was 1252. Age of the patients was between 15 and 53 year old (mean: 31.7, standard deviation: 8.7). 95% of them were married (12% divorced that denied sexual relation), 75% were multiparous and 61% had regular menses. Neither had multipartner sexual relationship. Method of contraception of the patients is summarized in table1. The most common symptom was pruritus (56%) followed by local irritation and dyspareunia (Table 2). Frequency of intercourse is summarized in tables 3. Direct smear with normal saline and 10% KOH showed that 3% of

patients had trichomoniasis and 15% had candidiasis. Gram staining resulted that 51% had gram positive cocci (Table 4). Cultures taken from vaginal discharge were as follows: Negative: 18%, Gram positive cocci: 59%, Gram negative bacilli: 20%, *Gardenella vaginalis*: 2% and *Neisseria gonorrhoea*: 1%. In 62% of cultures just a single microorganism grew and 18% had mixed growth. Diagnostic yield of these three methods (direct smear, Gram staining and culture) is abstracted in table 5.

Table 1, Contraception methods.

Method	Number (%)
OCP	613 (49%)
IUD	451 (36%)
Tubal Ligation	125 (10%)
Condom	52 (4%)
Other Methods	11 (1%)

Table 2, Clinical symptoms.

Symptom	Number (%)
Only V. D.	313 (25%)
V. D. + Pruritus	162 (13%)
V. D. + Pruritus + Dysurea	112 (9%)
V. D. + Pruritus + L.B.P.	151 (12%)
V. D. + Pruritus + L.B.P. + Dysurea + L.I.	262 (21%)
V. D. + Dysurea + L.I. + Dysparaunea	101 (8%)
V. D. + L.B.P. + Dysurea + L.I.	151 (12%)

VD: Vaginal Discharge, LBP: Low Back Pain, LI: Local Irritation

Table 3, Frequency of intercourse.

Frequency of intercourse per week.	Number (%)
0-1	64 (5.1%)
2-4	395 (31.5%)
5 and more	793 (63.4%)

Table 4, Gram staining results.

Type of Bacteria	Number (%)
Gram Positive Cocci	638 (51%)
Gram Negative Bacilli	237 (19%)
Gram Negative Intracellular Diplococci	11 (1%)

Table 5, Microorganisms according to the laboratory methods.

Microorganism	Direct Smear (N, %, S)	Gram Staining (N, %, S)	Culture (N)
T. Vaginalis	38, 3%, -	-	-
G. Vaginalis	-	25, 2%, 100%	2
C. Albicans	187, 15%, 79%	-	237
G+ Cocci	-	638, 51%, 86%	738
G- Bacilli	-	237, 19%, 95%	250
G- Diplococci	-	11, 1%, 100%	11

G+: Gram Positive, G-: Gram Negative, N: Number, %: Percent, S: sensitivity.

Discussion:

Vulvovaginitis accounts for a considerable number of outpatient primary care and gynecology visits. The symptoms include vaginal discharge, odor, itching and discomfort. Some extragenital symptoms such as dysurea and low back pain may also occur. Normal vaginal secretions are usually white and cruddy, with a pH of 4.0 to 4.7. The most common type of vaginitis is bacterial vaginosis, followed by candidiasis and trichomoniasis. The prevalence of vulvovaginitis varies in different ages and populations.

In the United States, Trichomoniasis is one the most common sexually transmitted infections ⁽⁶⁾. It is usually diagnosed in the laboratory using direct smear with normal saline and culture. The sensitivity of direct smear is 60% to

80% and it is readily done ^(12, 13). In our study, culture for trichomoniasis was not available and direct smear showed that 3% of patients were infected. Due to lack of culture, it is guessed that the real prevalence is higher. Our results are comparable to the study performed in Turkey ⁽¹⁴⁾ and Mexico ⁽¹⁵⁾. The most common symptoms of trichomoniasis in our study were malodor yellow frothy vaginal discharge and splash dysurea.

Candida is usually present in the vagina and it acts as an opportunistic organism which activates as a pathogen when the flora of vagina is changed ⁽⁷⁾. In our study, 15% of patients had positive direct smear and 19% had positive culture which is similar to results of Sheet ⁽¹⁷⁾, who studied 215 patients and reported the candida in 20%. In Turkey ⁽¹⁴⁾, it is reported to be 18% and 20% in France ⁽¹⁸⁾. The most common symptoms of our candidiasis patients were white sticky vaginal discharge and pruritus.

Regarding *Gardenella vaginalis*, Schmidt ⁽¹⁶⁾ and Amsel ⁽¹⁹⁾ concluded that below clinical criteria should be present for diagnosis: presence of Clue cell, homogenous secretions adherent to vagina, alkaline pH and positive Sniff test. Diagnosis is made when 3 out of 4 are present. Since the positive predictive value of the culture media for *Gardenella vaginalis* is about 40% ⁽²⁰⁾, it is better to use the Gram staining (sensitivity is 95%). In some studies ^(12, 17), the prevalence is reported to be 7-17%. In our study, 2% had *Gardenella vaginalis* and 19% had Gram negative bacilli, (totally: 21%), which is similar to studies performed in England and France (18%).

The most common symptom of our bacterial vaginosis cases was malodor gray vaginal discharge which got worse after sexual intercourse.

Using condom as the contraception method is an effective way in decreasing the prevalence of infectious leukorrhea by preventing vaginal pH changes and decreasing nonspecific vaginal bacterial overgrowth. Rosenberg, et. al. ⁽²²⁾ showed that condom would decrease the prevalence of candidiasis by 50%. In our study, just 2% of those who used condom had candidiasis. Overall just 4% of our patients were using condom and it shows the effectiveness of condom in comparison with the other methods of contraception in prevention of infectious leukorrhea.

Another important influencing factor is the average number of intercourses. As the previous studies, the prevalence of infectious leukorrhea is dramatically increased with increment of the number of intercourses per week (Table 4).

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