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Original Research Article

Clinico-pathological study of vaginitis in peri and post-menopausal women

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ABSTRACT

Background: Menopause is universal phenomena which has adverse effect on health of women. The vaginal cytology by maturation value is an inexpensive mean to evaluate hormonal influence in women. Objective was to diagnose atrophic by vaginal pH and vaginal maturation value in peri and post-menopausal women symptomatic as well as asymptomatic.
Methods: This study conducted on 100 peri and post-menopausal women who attended in Department of Obstetrics & Gynaecology, Kamla Raja Hospital, and G.R. Medical College Gwalior from August 2015 to August 2016. They were divided into three groups: Group A (Cases) - subjects having VMV < 64 with or without symptoms, Group B (Suspects) - Symptomatic subjects with VMV > 64 and Group C (Controls) - Asymptomatic subjects with VMV > 64.
Results: The detection rate of vaginitis in total 100 peri and post-menopausal women in this study was 36% while detection rate in symptomatic peri and postmenopausal women was 36/65 i.e., 55.38%. To our surprise 13/35 (37.14%) had VMV < 64 (mild estrogen deficiency) in control group (asymptomatic postmenopausal women). They became true cases as VMV was taken as gold standard for diagnosis of vaginitis. It means that detection rate of vaginitis in asymptomatic peri and post-menopausal women were 37.14%.
Conclusions: There is a lack of awareness of symptoms and signs among both in population and physicians for early detection of vaginitis.

Keywords: Asymptomatic, Symptomatic, Menopause, Peri menopausal women, Post menopausal women

INTRODUCTION

Menopause is cessation of menstrual bleeding for at least 12 months. Serum FSH > 40 mIU/ml, serum estrogen level <20 pg/ml.[1] Principal health concerns of menopausal women includes vasomotor symptoms, urogenital atrophy, osteoporosis, cardiovascular disease, cancers, congestive decline and sexual problems.[2] Urogenital atrophy may leads to uterovaginal prolapse and its complications such as uremia. Vaginitis is inflammation of vagina due to thinning and shrinking of tissues as well as decrease lubrication.[3] It is caused by decreased level of estrogen which leads to decrease in vaginal cell proliferation and differentiation. In atrophic vaginitis genital symptoms include dryness, itching, burning, soreness, pressure, and white discharge, malodorous discharge, and malodorous discharge due to infection, painful sexual intercourse in addition sores and cracks may occur.[4] The vaginal cytology by maturation value is an inexpensive means to evaluate hormonal influences in women. Vaginal maturation value is calculated from the ratio of superficial, intermediate and parabasal cells in vagina smears has been used to detect vaginal atrophy and estrogen deficiency in post-menopausal women.[5] Vaginal maturation value is useful marker than vaginal maturation index to reveal vaginal estrogen deficiency regardless of the presence of

inflammation.[6] The perimenopausal and menopausal periods is generally associated with unavoidable manifestation of aging process in women and deterioration in quality of life.[7]

METHODS

The present case control study was carried out in the Department of Obstetrics and Gynaecology, Kamla Raja Hospital, G. R. Medical College, Gwalior from August 2015 to August 2016 on 100 peri and post-menopausal women and subjects were divided into three groups: case group, suspect group and control group. Women declining consent, infection/malignancy of genital tract, systemic disease, previous vaginal surgery, involving more than 1/3rd of vagina, positive amine test, and history of current or past therapy of estrogen progesterone replacement of vaginal estrogen therapy were excluded from the study.

Procedure

After taking informed consent, detailed history and examination of the patient was done. Clinical assessment done on demographic characteristics and urogenital symptoms were enquired. During per speculum and per vaginal examination signs of vaginitis noted. Vaginal pH levels were measured by pH indicator paper with color scale with range from pH 2-10.5 developed by Merck specialties Pvt. Ltd. This device is composed of foils containing Nitrazine yellow for pH testing. Vaginal maturation value estimation was performed by vaginal smears collected form lateral wall of mid third of vagina and mounted on a slide. In a total of 100 exfoliated vaginal cells, parabasal cells (P), intermediate cells (I), superficial cells were counted and results were expressed as the maturation value. Superficial cells were assigned a point value of 1.00, intermediate cells were assigned a point value of 0.5 and parabasal cells were assigned a point value of 0.0. The number of cells each category was multiplied by point values and three results were added to arrive a maturation value.[16] A value of 0-49 indicates low estrogen effect, a value of 50-64 indicates moderate estrogen effect and a value of 65-100 indicates high estrogen effect.

RESULTS

The present study was conducted with an aim to accurately record clinical symptoms and signs of atrophic vaginitis in peri and post-menopausal women to develop a clinical symptomatology-based categorization of cases and to correlate clinical signs and symptoms with vaginal maturation value for diagnosis of atrophic vaginitis in order to categorize the cases into mild and severe on the basis of vaginal maturation value and clinical signs and symptoms. A total of 100 subjects were enrolled in the study for the purpose of screening for atrophic vaginitis. They were divided into three groups: Case (Group A)-Subjects having VMV <64 with or without symptoms.

Table 1: Age wise distribution.

Times	Group A cases (N=49)		Group B Suspect (N=29)		Group C Control (N=22)	
	N	%	N	%	N	%
41-45	1	2.0	4	13.8	2	9.1
46-50	18	36.7	11	37.9	13	59.1
51-55	8	16.3	7	24.1	3	13.6
56-60	15	30.6	7	24.1	3	13.6
>60	7	14.3	0	0.0	1	4.5
Mean age±SD	55.35±7.03		51.48±5.17		50.50±4.48	
P as compared to control	0.007		0.834		-	

p=0.096

Table 2: Distribution of subjects in different groups according to socioeconomic status.

Socio-economic status	Group A cases (N=49)		Group B Suspect (N=29)		Group C Control (N=22)	
	N	%	N	%	N	%
Lower	18	36.7	12	41.4	11	50.0
Lower middle	6	12.2	1	3.4	1	4.5
Middle	19	38.8	15	51.7	9	40.9
Upper middle	5	10.2	1	3.4	1	4.5
Upper	1	2.0	0	0.0	0	0.0
Lower	18		36.7		12	
Lower middle	6		12.2		1	

p=0.642

Table 3: Parity wise distribution of subjects in different groups.

Parity	Group A cases (N=49)		Group B Suspect (N=29)		Group C Control (N=22)	
	N	%	N	%	N	%
Upto 3	23	46.9	7	24.1	9	40.9
4 and above	26	53.1	22	75.9	13	59.1

p=0.134

Suspects (Group B)-Symptomatic subjects with VMV > 64. Controls (Group C)-Asymptomatic subjects with VMV >64. It was seen that there were significantly higher proportion of subjects in the 46-50- and 56-60-years age group that was 36.7% versus 37.9%, 30.6% versus 24.1% in group A and Group B respectively. Statistically no significant difference among groups regarding age could be seen (p=0.096). Mean age of Group A was 55.35±7.03 years that of Group B and Group C was 51.48±5.17 and 50.50±4.48 years respectively.

Table 4: Distribution of subjects in different groups according to duration of menopause.

Duration (years)	Group A cases (N=49)		Group B Suspect (N=29)		Group C Control (N=22)	
	N	%	N	%	N	%
<5	24	49.0	15	51.7	17	77.3
5-7	2	4.1	7	24.1	2	9.1
7-10	13	26.5	5	17.2	2	9.1
> 10	10	20.4	2	6.9	1	4.5
Mean duration±SD	7.33±6.03	4.83±3.17	3.82±3.39			

p=0.016

Table 5: Detailed description of symptoms in symptomatic subjects

Symptoms	Group A Cases (N=49)		Group B Suspect (N=29)		Statistical Significance	
	Frequency	%	Frequency	%	χ^2	P
Dryness	35	97.2	27	93.1	0.619	0.431
Itching	32	88.9	24	82.8	0.506	0.477
Burning	22	61.1	9	31.0	5.824	0.016
Soreness	14	38.9	2	6.9	8.859	0.003
Perineal pressure	16	44.4	8	27.6	1.960	0.162
Discharge p/v	9	25.0	4	13.8	1.261	0.262
Painful intercourse	11	30.6	5	17.2	1.534	0.215
Something protruding out from vagina	5	13.9	2	6.9	0.817	0.366
Burning micturition	12	33.3	8	27.6	0.249	0.618
Increased frequency of urination	13	36.1	14	48.3	0.979	0.323
Painful micturition	3	8.3	3	10.3	0.078	0.781
Incontinence	0	0	0	0	-	-
Hematuria	0	0	0	0	-	-

Table 6: Detailed description of findings in symptomatic subjects on per speculum examination

Findings	Group A Cases (N=49)		Group B Suspect (N=29)		Statistical Significance	
	Frequency	%	Frequency	%	χ^2	P
Dry vagina	15	41.7	14	48.3	0.284	0.594
Itch marks	2	5.6	1	3.4	0.162	0.687
Shiny flat vaginal mucosa	20	55.6	7	24.1	6.528	0.011
Redness, swelling ulceration	8	22.2	2	6.9	2.898	0.089
Discharge p/v	9	25.0	5	17.2	0.572	0.449
Narrow vaginal genital organ	6	16.7	3	10.3	0.538	0.463
Genital organ prolapse	4	11.1	3	10.3	0.010	0.921

Table 7: Distribution of pH in subjects.

pH	Group A Cases (N=49)		Group B Suspect (N=29)		Statistical Significance	
	Frequency	%	Frequency	%	χ^2	P
4.5-5.0	6	12.2	1	3.4	3	13.6
5.1-6.0	13	26.5	16	55.2	10	45.5
6.1-7.0	15	30.6	10	34.5	9	40.9
7.1-8.0	10	20.4	2	6.9	0	0.0
>8	5	10.2	0	0.0	0	0.0
Mean±SD	6.67±0.95	6.20±0.65	6.06±0.84			

p=0.021

Majority of subjects were from upper and middle strata. Statistically, no significant association between socioeconomic status among three groups was observed (p=0.642). 61% of subjects had parity more than 4; 53.1% in Group A, 75.9% in Group B and 59.1% in Group C had parity > 4. However, no statistically significant association

was found with parity among three groups (p=0.134). Mean duration of menopause was higher in Group A as compared to Group B and Group C. The mean duration of menopause in Group A, B and C were 7.33±6.03, 4.83±3.17 and 3.82±36.39 years respectively. The difference among groups was found to be significant statistically (p=0.016).

Table 8: Correlation of pH and VMV in subjects.

pH	VMV category					
	< 49		49-64		> 64	
	N	%	N	%	N	%
≤4.5-5.0	0	0.0	3	8.6	4	7.8
5.1-6.0	3	21.4	10	28.6	26	51.0
6.1-7.0	1	7.1	14	40.0	19	37.3
>8	8	57.1	7	20.0	2	3.9
Mean pH	2	14.3	1	2.9	0	0.0

p<0.001

Table 9: Correlation of symptoms and VMV in cases.

Symptoms	VMV category				χ^2	P value
	<49 (N=13)		49-64 (N=36)			
	N	%	N	%		
Dryness	13	100	22	61.1	7.078	0.008
Itching	10	76.9	22	61.1	1.054	0.305
Burning	10	76.9	12	33.3	7.335	0.007
Soreness	6	46.2	8	22.2	2.680	0.102
Perineal pressure	7	53.8	9	25.0	3.614	0.057
Discharge p/v	4	30.8	5	13.9	1.815	0.178
Painful intercourse	4	30.8	7	19.4	0.704	0.402
Something protruding out from vagina	4	30.8	1	2.8	8.167	0.004
Burning micturition	4	30.8	8	22.2	0.377	0.539
Increased frequency of urination	7	53.8	6	16.7	6.773	0.009
Painful micturition	2	5.4	1	2.8	2.641	0.104
Incontinence	0	0.0	0	0.0	-	-
Hematuria	0	0	0	0.0	-	-
No symptoms	-	-	13	36.1	-	-

Table 10: Correlation of Signs and VMV Scores in cases.

Signs	VMV category				χ^2	P value
	<49 (N=13)		49-64 (N=36)			
	Frequency	%	Frequency	%		
Dry vagina	6	46.2	9	25.0	2.012	0.156
Itch marks	1	7.7	1	2.8	0.589	0.443
Shiny flat vaginal mucosa	12	92.3	8	22.2	19.421	<0.001
Redness, swelling ulceration	2	15.4	6	16.7	0.011	0.915
Discharge p/v	2	15.4	7	19.4	0.105	0.746
Narrow vaginal introitus	4	30.8	2	5.6	5.651	0.017
Genital organ prolapse	3	23.1	1	2.8	5.250	0.022
Urethral caruncle	0	0	0	0	-	-
Petechial hemorrhage	0	0	0	0	-	-
No signs	0	0	13	36.1	-	-

Burning and soreness was present in significantly higher proportion in symptomatic cases as compared to symptomatic suspects that is 61.1% versus 31.0%, 38.9% vs. 6.9% respectively. It was statistically significant also (p0.01 and 0.003). Shiny flat mucosa was found in 55.6% in Symptomatic cases and 24.1% in Symptomatic suspects. Difference was found to be statistically significant (p=0.011). Mean pH of Group A, B and C were 6.67±0.95, 6.20±0.65 and 6.06±0.84 respectively which was found to be statistically significant (p=0.021).

Mean pH is VMV categories < 49, 49-64 and > 64 was 7.72±0.85, 6.47 01770.92 and 6.14±0.65 respectively which was found to be significant statistically (p<0.0001). Symptoms of dryness, burning, perineal pressure, something coming out of vagina, increased frequency of urination were more common in severe atrophic vaginitis (VMV < 49) as compared to mild atrophic vaginitis (VMV 49-64) i.e. 100% vs. 61.1%, 76.9% vs. 33.3%,. 53.8% vs. 25%, 30.8% vs. 2.8%, 53.8% vs. 16.7% which was found to be statistically significant. "P" values were 0.008, 0.007, 0.057, 0.004, and 0.009 respectively. Shiny flat vaginal mucosa was present in 92.3% of subjects in severe vaginitis only 22.2% in mild atrophic vaginitis that is found to be statistically highly significant (p<0.001). Narrow vaginal introitus, genital organ prolapse was significantly more common in severe atrophic vaginitis as compared to mild vaginitis (p=0.017 and p=0.022).

DISCUSSION

The menopause in women results in deficiency of estrogen due to ovarian failure. Atrophic vaginitis is an unavoidable consequence of menopause due to estrogen deficiency. A total of 100 peri and post-menopausal women were attending gynae OPD, G.R. Medical College, Gwalior were recruited in the study. The difference of age between Group A and C was found statistically significant but difference (p=0.007) but difference between Group and C and among all the groups was not statistically significant (p=0.834 and 0.096 respectively). Similar findings were found in the study by Yoruk et al in which women with atrophic symptoms, the age was significantly higher than those without these symptoms.[8] The mean age in symptomatic group was 56.4±45.1 and 56.4±5.1 and in asymptomatic group was 50.1 years which was also significant (p<0.003). In this study, on statistical analysis all groups were well matched regarding socioeconomic status and parity. Difference was not found to be statistically significant. Similar findings were observed by Yoruk et al who found no significant difference between two groups regarding parity and socioeconomic status.[8] Similar findings were also found in the study done by Sebestian et al that there was no statistically significant difference of age and BMI.[9] In this study, mean duration of menopause was 7.33±6.03 in Group A while in Group B and Group C, it was 4.83±3.17, 3.82±3.329 years respectively. There is significant correlation between duration of menopause and development of atrophic vaginitis (p=0.016). It indicates that as duration of menopause increases, there are increase chances of having atrophic vaginitis. In this study, out of all clinical symptoms dryness of vagina was the most common symptom both in symptomatic cases and symptomatic suspects that was 97.2% and 93.1% respectively followed by itching that was 88.9% and 82.8% respectively but both were not statistically significant (p=0.431 and 0.477).

Symptoms of burning and soreness in subjects of symptomatic cases and symptomatic suspects were 61.1% versus 38.9% versus 6.9% respectively which was found to be significant statistically (p=0.0169, p=0.003). Similar finding was found in the study done by Yoruk et al in which vaginal dryness (69.6%) and pruritis (18.7%) were most common complaints after dyspareunia (70.8%).[8] They had higher percentage of cases with dyspareunia than in our study (70.8% vs. 20.51%); this difference and finding can be explained by difference of women's social status and sexual behavior.

In the present study, 100 subjects had mean vaginal pH 6.39±0.41 while group A, group B and group C mean pH was 6.67±0.95, 6.20±6.05 and 6.06±0.84 respectively. The difference was found to be statistically significant (p=0.021). It is comparable to study done by Pinar Yoruk et al in which all women with urogenital atrophy had vaginal pH > 5.6 and mean value 6.86±0.83 (p=0.002). This present study suggests significant inverse correlation between vaginal pH and vaginal maturation value. When maturation value was correlated with symptom it was found that in severe estrogen (VMV <49) >6 symptoms were present. These symptoms were dryness (100%), itching (76.9%), soreness (46.2%), perineal pressure (53.8%), increased frequency of micturition (53.8%). It was again confirmed on categorization of subjects on symptomatology.

When maturation value correlated with sign it was found that in severe vaginitis VMV (<49) more than 3 signs were present. These signs were dry vagina (46.2%), shiny flat vaginal mucosa (92.3%), narrow vaginal introitus (30.8%) while in mild vaginitis <3 signs were present. On examination shiny flat vaginal mucosa, narrow vaginal introitus and genital organ prolapse was statistically significant (92.3% and 22.2% and 30.8% vs. 5.6%, 23.1% vs. 2.8% respectively) (p<0.001, 0.017 and 0.022 respectively). This study is comparable to study done by Brizzolara et al which concludes vaginal pH above pH above 6 significantly correlates with high level of parabasal cells (>20%) (p<0.001).[10] Our findings are supported by the study of Yoruk et al which shows mean MV 34.7±16.2 in symptomatic and 83.8±9.4 in asymptomatic which was statistically significant (p<0.01).[8]

CONCLUSION

Study concluded that there is a lack of awareness of symptoms and signs among both in population and physicians for early detection of vaginitis and vaginal maturation value is simple, practical, quiock, economic and MV can be obtained simultaneously with Pap smear test, which is a part of routine follow-up, does not require additional intervention and easily interpreted at office setting.

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