Original Research Article

Study on epidemiology of endometriosis in North East India

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ABSTRACT

Background: Endometriosis is the presence of endometrial glands and/or stroma outside the uterus, predominantly in reproductive age. The prevalence is around 10% in women of reproductive age and is caused by combination of multiple genetic and environmental factors. Characterization of endometriosis can be learnt from epidemiological factors of the patients which influence on disease development and thus helpful in clinical diagnosis. Histological pictures after surgery may vary considerably and sometimes over diagnosis of the disease is not uncommon. The purpose of the study was to study the epidemiology of endometriosis in North East population of India and correlation of clinical and histopathological diagnosis.
Methods: It was a hospital based observational descriptive study carried out in Department of Obstetrics and Gynecology, AMCH, Dibrugarh, Assam, India. Detailed history and clinical presentations were elicited and relevant investigations were done. Operative findings and biopsy reports were correlated. All the findings were tabulated and statistically analyzed.
Results: Women in age group 30-39 years (48.31%) with mean BMI of 24.44±4.06 kg/m^2, nulliparous (31.46%) or para 1(33.71%) formed the majority of study population. Majority had early age at menarche (11.45±1.24), irregular cycles, shorter cycle length, longer duration of flow. Majority (79.78%) had dysmenorrhea followed by dyspareunia (59.55%). Only 62.92% had biopsy proven endometriosis.
Conclusions: Epidemiological factors and clinical presentations guide in diagnosing endometriosis and should be given importance. Clinical diagnosis of endometriosis may not always correlate with histopathologic diagnosis and many other pathologies mimic endometriosis.

Keywords: Endometriosis, Epidemiology, Histopathology, Low parity

INTRODUCTION

The rising incidence of Endometriosis is a concern worldwide. The incidence varies from place to place, country to country and with ethnicity. The North East India is having diverse ethnicity and population of varied socio economic status. The life style and food habits also differ from other parts of the country.

It is observed that the knowledge of epidemiology is essential to know the reasons of varied prevalence rate of the disease in the world.

Endometriosis is found predominantly in women of reproductive age.[1] The incidence is difficult to estimate due to asymptomatic behavior of the disease and imaging modalities with low sensitivity for diagnosis. Keeping diagnostic laparoscopy with or without biopsy as the standard modality for diagnosing endometriosis, annual incidence of surgically diagnosed endometriosis is

estimated to be 1.6 cases per 1000 women aged between 15 and 49 years.[2,3] The wide variations in prevalence is because of low sensitive diagnostic methods and the experience of the surgeon as there is wide variation in appearance of endometriotic implants and lastly, they lack histopathological confirmation.[4,5]

The possible risk factors for endometriosis are: early age at menarche, shorter menstrual cycle length, frequent menstrual cycles, infertility, low parity, Mullerian anomalies, endometriosis in 1st degree relative etc.[6,7] The main symptoms of endometriosis are dysmenorrhoea, chronic pelvic pain, infertility, dyspareunia, cyclic urinary and intestinal symptoms.

The aim of the study was to search for the epidemiological factors in the population of Nort East India. Effort was also taken to correlate clinical diagnosis and histopathological outcome.

METHODS

This hospital based observational study was conducted in Department of Obstetrics and Gynecology, Assam Medical College and Hospital, Dibrugarh, Assam. This city is located in the North East part of India. The study duration was 1 year (July 2020-June 2021). A written informed consent was taken from women willing to participate in the study.

Sample size included all patients with clinical features suggestive of endometriosis who attended gynecology OPD and fulfilled inclusion criteria which included women in reproductive age group with complaints of dysmenorrhea, dyspareunia, chronic pelvic pain with or without infertility and cyclical hematuria and the patients needing laparoscopy/laparotomy. Study participants with other causes of chronic pelvic pain and infertility were excluded from the study. Patients were elicited a detailed history, clinical presentation, history of any prior treatment, personal history, family history, obstetric history and epidemiological history. Patients were thoroughly examined and significant clinical findings were noted. Relevant investigations were done. The mode of diagnosis of endometriosis was noted and were classified as non-invasive (clinical examination, imaging modalities) and invasive (laparoscopy or laparotomy). During laparoscopy/laparotomy, characteristics of the lesions were noted and biopsies were taken for histopathological examination. Based on the intraoperative findings, staging was done according to the rASRM staging.

Descriptive study was conducted by presenting relative frequencies for each epidemiological and clinical variable. Odds ratio were used to determine variations in clinical/visual diagnosis and histological diagnosis of endometriosis. Univariate odds ratio along with 95% CI (confidence interval) were calculated to assess the epidemiological and clinical determinants and for clinical and histopathological correlation. Statistical significance was tested using chi-square test. A p-value of <0.05 was considered as statistically significant. All the analysis were done using computer software the Statistical Product and Service Solutions (SPSS) version 16.0 and Microsoft word 2007.

RESULTS

As shown in Table 1, the study population was divided into 3 age groups and mean age of the study participants was 34.54±6.72. Majority were married (65.17%), had completed high schooling (49.44%), belonged to upper middle class (53.93%) according to BG Prasad's socioeconomic status classification and were mostly unemployed (50.56%). The mean BMI was 24.44±4.06kg/m^2 with majority of them physically active (60.67%). Majority were either nulliparous (31.46%) or with one issue (33.71%) and majority of them had no history of spontaneous abortion (75.28%). Majority gave the history of oral contraceptive usage (55.06%) at least for ≥3 months which included usage for non-contraceptive purpose too. Only 20.22% study participants could give first degree family history of endometriosis.

Table 1: Sociodemographic characteristics of the studied population (N=89).

Variable	Number	Percentage	Mean±SD
Age (years)			
≤29	19	21.35	
30-39	43	48.31	34.54±6.72
≥40	27	30.34	
Marital status			
Yes	31	34.83	
No	58	65.17	-
Education level			
Primary	13	14.02	
High school	44	49.44	-
Higher education	32	35.95	
Socioeconomic status			
I	10	11.24	
II	48	53.93	
III	13	14.61	-
IV	18	20.22	
V	0	0	
Occupation			
Student	11	12.36	
Employed	33	37.08	
Unemployed	45	50.56	
BMI (kg/m^2)			
<18.5	09	10.11	
8.5-24.9	29	32.58	
25.29.9	31	34.83	24.44±4.06
≥30	20	32.48	
Physical activity			
No	35	39.33	

Continued.

Variable	Number	Percentage	Mean±SD
Yes	54	60.67	
Parity			
0	28	31.46	
1	30	33.71	
2	18	20.22	-
≥3	13	14.61	
H/O spontaneous abortion			
No	67	75.28	
Yes	22	24.72	-
H/O contraceptive use			
Oral	49	55.06	
Injectable	29	32.58	-
IUCD	11	12.36	
Family history			
Yes	18	20.22	
No	71	79.78	-

Table 2: Distribution of menstrual characteristics of the study population.

Variable	N	%
Age at menarche		
≤11	46	51.6
12	25	28.09
≥13	18	20.22
Length of cycle		
≤27days	62	69.66
>28 days	27	30.34
Amount of flow		
Light	20	22.47
Moderate	53	59.55
Heavy	16	17.98
Length of flow		
≤4 days	20	22.47
5 days	30	33.71
≥6 days	39	43.82
Regularity of cycles		
Regular	18	20.22
Irregular	71	79.78

As shown in Table 2, the mean age of menarche was noted to be 11.45±1.24 years with 69.66% having shorter cycle lengths (≤27days) and 59.55% having moderate flow. Majority had a cycle length of ≥6days (43.82%) and 79.78% experienced irregular cycles.

As shown in Table 3, among the clinical presentations, there was overlapping of symptoms with dysmenorrhea being the most common (79.78%) followed by dyspareunia (59.55%) and non-cyclic CPP (53.93%). Majority (51.69%) had infertility which included both primary and secondary infertility. For diagnosis, noninvasive methods were used in 39.33% and 60.67% needed invasive diagnostic modality. DIE (56.18%) and ovarian endometriosis (33.71%) were found predominantly and among these 59.55% belonged to stage III/IV (rASRM).

Table 3: Clinical characteristics of the studied population.

Variables	N	%
Symptoms		
Dysmenorrhea	71	79.78
Dyspareunia	53	59.55
Non-cyclical CPP	48	53.93
Cyclical intestinal complaints	35	39.33
Cyclical urinary complaints	18	20.22
Others(symptoms of IBS+ Asymptomatic)	9	10.11
Infertility		
Yes	46	51.69
No	43	48.31
Diagnostic **method**		
Non-invasive	35	39.33
Invasive	54	60.67
Endometriosis type		
Superficial	9	10.11
Ovarian	30	33.71
DIE	50	56.18
Endometriosis staging		
I & II	36	40.45
III & IV	53	59.55

Table 4: Comparison of patient characteristics, symptoms and staging in biopsy positive and negative endometriosis.

Variable	Biopsy positive	Biopsy negative	Odds ratio (CI 95%)
Parity			
Nulliparous	22	6	2.911 (1.03-8.19)
Multiparous	34	27	0.343 (0.122-0.966)
Symptoms			
CPP	40	8	7.81 (2.91-20.91)
Infertility	33	10	3.30(1.323-8.227)
Dysmenorrhea	54	17	25.41(5.29-121.8)
Dyspareunia	48	5	33.60(10.01-112.7)

Continued.

Variable	Biopsy positive	Biopsy negative	Odds ratio (CI 95%)
Other	3	6	0.254(0.059-1.098)
Staging of disease			
I	6	10	0.276(0.089-0.851)
II	7	13	0.219(0.0765-0.6317)
III	25	4	5.846(1.812-18.85)
IV	24	0	50.507(2.947-865.585)

As shown in Table 4, out of 89 clinically diagnosed endometriosis, 56 of them had biopsy positive for endometriosis (62.92%). The odds of nulliparous women with clinical symptoms of dyspareunia, dysmenorrhoea, CPP and infertility and with staging III/IV had more chances of being histologically positive than multiparous women with any other symptoms or belonging to stage I/II and all these were statistically significant (p<0.05).

DISCUSSION

Endometriosis is found predominantly in the reproductive age group.[12] In this study, mean age was 34.54±6.72. Other studies showed similar results with mean age 36.1±7.2 and 34.3±6.7 respectively.[13,14] The mean BMI in our study was 24.44±4.06 kg/m^2 and other studies showed inverse relationship between low BMI and endometriosis similar to our study.[13,14] However, increased body fat contributes for increased oestrogen which is a risk factor for endometriosis and thus relationship between BMI and endometriosis still needs to be evaluated. Parity showed inverse relationship with endometriosis and it was found in our study that low parity contributed 63.49% of the total cases which were comparable to another study where nulliparous females were 64.63%.[15] Meta-analysis showed increase in parity decreased the incidence of endometriosis and this association was consistent.[16] A total of 55.06% study participants had the history of oral contraceptive use and oral contraceptive use is proven as a risk factor for endometriosis.[13,17]

Mean age at menarche in our study was found to be 11.45years and it is said that there is a small increased risk of endometriosis with respect to early age at menarche.[18,19] According to studies, shorter cycle lengths (≤27 days) had increased risk of endometriosis and in our study 69.66% had shorter cycle lengths.[15,20] Majority (59.55%) had moderate flow which was comparable to another study.[18] Majority (43.82%) had length of flow for ≥6 days which was similar to another study and was shown that length of flow for ≥6 days had 2.5 times odds of incidence of endometriosis.[21] In the present study, the cycles were irregular in 79.78% and it is shown that women with irregular menstrual cycles have increased risk of endometriosis (OR-4.7).[18]

In this study, dysmenorrhoea (79.78%), dyspareunia (59.55%) and non-cyclical CPP (53.93%) were the most common symptoms in order and similar results were noted in another study.[13]

Nine percent of the study population also gave history of treatment for IBS. In a study, it is noted that IBS and endometriosis are sharing a common pathophysiology and noted to co-exist.[8] In this study, 51.69% patients had complaints of infertility. Studies, showed similar results and also showed increased risk of endometriosis with the presence of history of infertility.[13,14]

Non-invasive methods were sufficient to diagnose endometriosis in 39.33% and 60.67% were diagnosed after invasive methods. Out of all patients diagnosed with endometriosis, only 62.92% were histopathologically proven to have endometriosis. Similar results and necessity of laparoscopy/laparotomy were shown in another study.[13] Among the study participants, ovarian endometriosis noted in 33.71% and deeply infiltrating endometriosis (DIE) in 56.18%. According to rASRM staging, 59.55% belonged to stage III/IV. These results were similar to other studies.[13,14] And these results were suggestive of the delay in diagnosis.

It was found that nulliparous women had more chances of endometriosis than multiparous women (OR 2.911 vs 0.343 with 95% CI). Chances of getting histology positive endometriosis increased with increased staging and positivity was well correlated with symptoms of dyspareunia and dysmenorrhoea. All these findings were similar to another study.

CONCLUSION

As there is no single etiology for the diagnosis of the disease and as it has wide clinical presentations, it is important to have the knowledge of the epidemiological factors and clinical determinants of regional population and is much essential for the early diagnosis and treatment. It is good to take biopsy during invasive procedure to diagnose other conditions mimicking endometriosis and keep in mind that negative report does not rule out endometriosis. Correlation of IBS and endometriosis needs further detailed study.

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