International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Mohan M et al. Int J Reprod Contracept Obstet Gynecol. 2016 Nov;5(11):3883-3888
www.ijrcog.org

pISSN 2320-1770 | eISSN 2320-1789

DOI: http://dx.doi.org/10.18203/2320-1770.ijrcog20163858

Original Research Article

Cohort study of endometriosis in south Indian district

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Received: 26 August 2016
Revised: 03 October 2016
Accepted: 07 October 2016

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ABSTRACT

Background: Endometriosis is a life threatening problem in reproductive age women. The aim of the present study is to correlate the association of endometriosis with primary and secondary infertility pertaining to age distribution, staging of the disease based on AFS scoring by laparoscopy.
Methods: A retrospective approach of using a questionnaire method to collect the case history of women suffering from endometriosis at Ramakrishna Medical centre, Trichy during the period of January 2012 – June 2015 was carried out. Women having endometriosis with infertility problem was an inclusion criteria whereas, women without endometriosis are excluded from the study, a total of 195 women were subjected to incorporate various parameter and verdict the inference of this study. In addition, other parameters such as the Incidence of endometriosis among patients subjected to laparoscopy, age of the patients, type of infertility, also the stages of endometriosis based upon the laparoscopic findings were recorded. Further the analysis of clinical data was carried out using MS excel and SPSS version-16.
Results: Incidence of endometriosis among infertility patients who have undergone laparoscopy was 195/569 (34.2%), Age group at which highest incidence observed is between 26-30 years (37%). Between the ages of 21 to 25 years incidence of endometriosis was 18%, 21-30 years which is the optimum age for reproduction the incidence was 55 %. Primary infertility was seen in 84.5% subjects. Some association was seen in Stages of endometriosis and laparoscopy findings whereas there was no association between the age and stages of the disease. PCOS, fibroids and Mullerian anamolies were observed to be associated with endometriosis.
Conclusions: This study concludes that endometriosis predominantly affects the women of reproductive age group and causes primary infertility in majority of the patients. A laparoscopic finding marks as a standard tool in diagnosis and treatment of endometriosis which would be reported by association between endometriosis stage with age of women and laparoscopic findings.

Keywords: Age, Endometriosis, Epidemiology, Infertility, Laparoscopic findings

INTRODUCTION

Endometriosis is a disease of the reproductive age group. It is a benign proliferative disease which has a tendency to invade the surrounding tissues and leads to adhesions. The national women's health informative centre reported 10-20% of the American women of childbearing age and 2 million women in UK suffer from endometriosis. 176 million women all over the world suffer from endometriosis. 26 million in India have endometriosis. Endometriosis affects the women from menarche to menopause. Symptoms may include dysmenorrhoea,

dyspareunia, infertility, chronic pelvic pain, bladder/and bowel symptoms. Time taken for diagnosis in adolescent girls varies between 2-9 years. The incidence of endometriosis among infertile patient ranges between 20-50%.[1,2] Some patients remain asymptomatic.[3]

The pathology of endometriosis has several theories namely Sampson's spill theory, Meyer's metaplastic theory, Halbans Lymphovascular theory and Immunological theory. Among which, Immunological theory is gained more importance than other theory.[4-9] This disease leads to lot of economical burden due to medical and surgical management.[10] There is also economical loss due to loss of working hours. Women also face the social problem of infertility and this causes depression which deeply affects the quality of life.[11,12]

In diagnosis, Ultra sonogram and MRI are the non-invasive tests for diagnosis and there are numerous biomarkers like CA125, CA199, MMP etc., but not considered for definitive diagnosis. Further, Laparoscopy is the good standard tool in diagnosis and treatment of endometriosis; the stages of endometriosis differentiate based upon their AFS (American Fertility Score) and the following clinical Figure 1A-D to prove the stages of endometriosis by laparoscopy.[13]

Severity of the symptoms like pelvic pain and dyspareunia depends upon the staging. The symptoms of the disease rapidly progresses at the advanced staging. Very rarely, early endometriosis causes severe symptoms. Similarly mean fecundity rate is also condensed to 1-3% vs 20% per cycle in infertile with endometriosis patient's vs fertile non-endometriosis patients. Conception rate also depends upon the severity of the lesion and it drops drastically in severe lesions up to 25-48 % of women with infertility diagnosed with endometriosis.[14,15]

In the present study, the incidence of endometriosis, age of the patient, staging as per laparoscopic findings and type of infertility (both primary and secondary) were studied by following graphical representation (Figure 2).

METHODS

This epidemiological study was conducted at Ramakrishna Medical Centre, during the period January 2012 to June 2015. This is retrospective analytical study, the patients data collected based on Inclusion and Exclusion criteria. In Inclusion criteria, the women belonging to the age group of 20-40 years with a history of infertility and histological proof and Exclusion criteria belongs to age beyond 40 years with recurrent endometriosis, undiagnosed bleeding, Endometriosis in fertile women. During the study period, 569 infertile women underwent laparoscopy, among which, 195 women were diagnosed with endometriosis. Remaining patients had different presentations such as Fibroids, Tubal dysfunction, PCOS etc. The proforma used in collection of data aided is recording of the Socioeconomic background of the subjects such as age of the patient, detailed history regarding lifestyle, type of family, education, smoking, alcohol etc., followed by determination of clinical data such as BMI, menstrual abnormalities, type of infertility, treatment given and laparoscopy findings. The laparoscopy findings were entered based upon AFS scoring as given earlier. Association of age and AFS staging was analysed statistically. All the collected data were entered and converted to SPSS (Version 16).

RESULTS

Among the 569 subjects, 195 women with infertility problems presented with endometriosis. They were segregated into 4 categories according to their age (20-25yrs, 26-30yrs, 31-35yrs, 36-40yrs). The frequency of endometriosis was correlated to the age of the subjects. Maximum frequency was observed between the age group of 26-35 years (37%+31%), high frequency were reported in the reproductive age group of 26-30 (37%) Figure 3.

Table 1: Association of endometriosis women age with stages.

Age of endometriosis women	Stage I		Stage II		Stage III		Stage IV	
	N (%)	OR	N (%)	OR	N (%)	OR	N (%)	OR
20-25	8 (23.5)	1.33	7 (20.5)	1.12	12 (35.2)	2.01	7 (23.5)	1.12
26-30	15 (21.1)	0.57	16 (22.5)	0.61	24 (33.8)	0.91	16 (22.5)	0.61
31-35	9 (14.7)	0.41	12 (19.6)	0.61	32 (52.4)	1.62	8 (13.1)	0.41
36-40	3 (11.1)	0.71	8 (29.6)	2.12	12 (44.4)	3.10	4 (14.8)	1.05

*N - Numbers in percentage; *OR- Odds Ratio

The Figure 4 depicts the incidence of primary and secondary infertility in response to the age of the subjects. Among the 195 cases diagnosed with endometriosis, nearly 84.5% where between the age

group of 26-30 yrs accounted for primary infertility. Similarly, the secondary infertility was less predominant between the age group of (26-30). The result implies endometriosis equally has a negative impact on fertility invariably of primary or secondary infertility.

The Figure 5 shows AFS score of each stages against the age of women presented for the study. The results connotes, the highest incidence of stage III was so significant among the age group of 31-40 years (incidence 52.4%) as compared to the other stages. In general, among all age groups, stage III was more common and a reduction in the incidence of stage I and IV was observed as the age increases, whereas an irregularity was observed pertaining to stage II. As regards as below result were justify the stages of endometriosis is even for all the age groups were imply that mild, moderate or severe in which condition age is not a significant obsession.

Table 2: Association of laparoscopic findings with staging of endometriosis.

Laparoscopic findings	Stage I		Stage II		Stage III		Stage IV	
	N (%)	OR	N (%)	OR	N (%)	OR	N (%)	OR
Surface endometriotic spots	27 (13.8)	2.5*						
Early endometriosis	20 (10.2)	3.3*						
Uterosacral endometriotic spot	14 (7.17)	4.8*						
Mild endometriotic cyst, scar endometriosis			18 (9.23)	3.7				
Right ovarian chocolate cyst					43 (22)	1.5		
Left ovarian chocolate cyst					26 (13.3)	2.6		
Bilateral Endometriotic cyst/ Both ovaries are chocolate cyst							47 (24.1)	1.4

*Statistically significance level p<0.0001

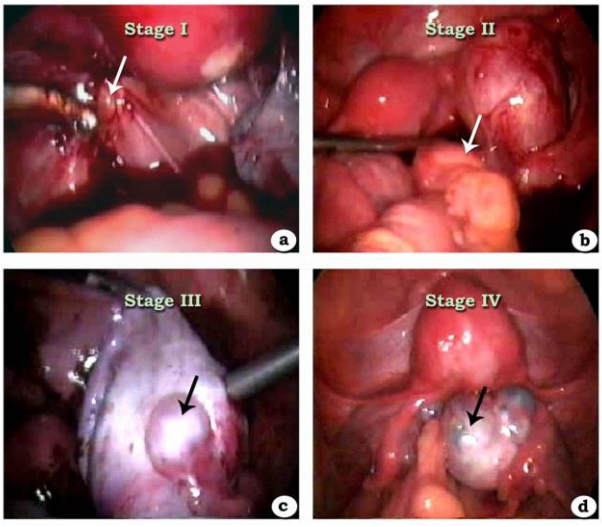

Figure 1: Clinical stages of endometriosis in women by laparoscopic observation (a) Stage I - Minimal (b) Stage II - Mild (c) Stage III - Moderate (d) Stage IV - Severe.

An influential association was observed between the age and stages of the disease (Table 1). But, as per the value of OR (Odds Ratio), there was no significant association between the age and stage of the disease.

There was a distinct statistical association between diagnostic laparoscopy findings and the staging of endometriosis. The Laparoscopic examination showed a significant association with staging of the disease. The efficient diagnosis of endometriotic spots by laparoscopy at early stages of endometriosis is associated with stage-I (p<0.0001) (Table 2). The results implicate those laparoscopic surgeries remains as a good standard till date in staging of the condition.

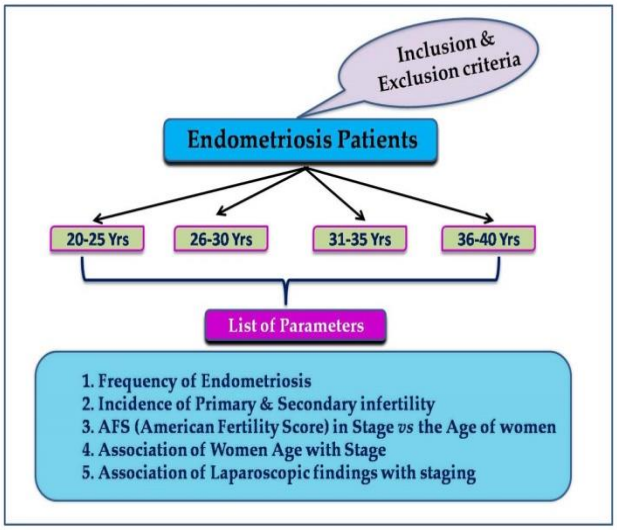

Figure 2: Graphical representation of flow of work, study group and list of parameters assessed.

DISCUSSION

Endometriosis condition has emerged more prevalent in the past decade which takes turmoil in every aspect of day today life. In the advent of various recent technological inventions, it still remains as a difficult task for diagnosing and management of the condition.[16] The present study, made an attempted to understand the frequency of endometriosis depending upon the reproductive age group in a particular set of population. The frequency of endometriosis was highly observed between the age group of 26-30 years old presenting with an increase in primary infertility. Further, similar studies were compared and supported to the frequency endometriosis among infertile women highly affected.[16] The mean reproductive age of 29±5.3 years, the predominance of endometriosis privileged in compared with other studies.[2,17,18]

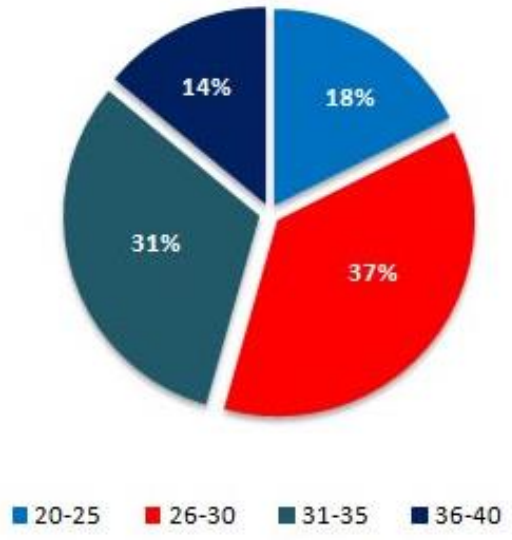

Figure 3: Frequency of endometriosis according to their age.

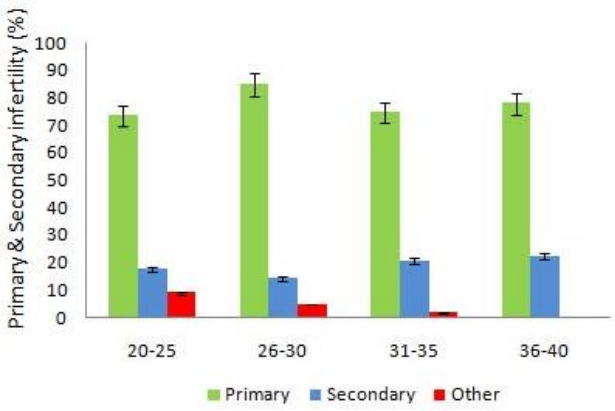

Figure 4: Incidence of primary and secondary infertility according to their age.

Among four different age groups the incidence of primary infertility increased in between the age of 26-30yrs compared to that of secondary infertility. The above findings similar to the other evocative study proved by Vercellini, quite a number of infertility cases has reported the even mere signs and symptoms caused by endometriosis.[19] In a vast, it's been identified that endometriosis is also one of the risk factor for causing primary infertility, this were carried in hospital based case control study. According to female age to categories the infertility women in lower and higher age group were reported.[20,21]

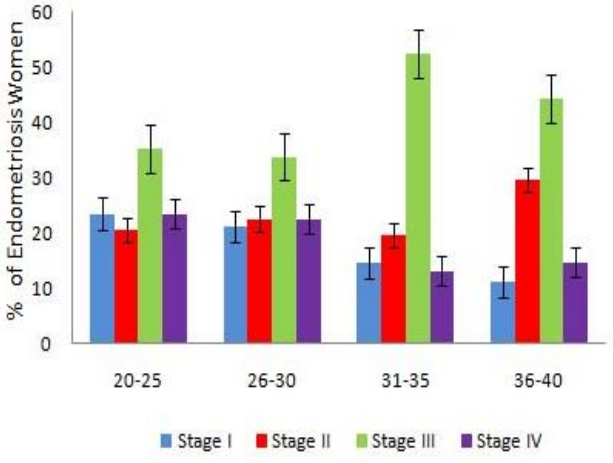

Figure 5: American fertility Score in 4 stages vs age of women.

No significant association between age and staging of endometriosis has been observed in the current study. Randomization of endometriosis staging with respect to the age group was more common. A study was carried out in certain European and Western countries to test the association between BMI, Endometriosis and staging the results of the studies also concluded dissociation between the parameters.[22,23]

The final diagnosis of endometriosis can substantiate only by laparoscopic procedure.[16] The present study, staged the condition into four categories based on the endometriosis spotting area and the American fertility score.[13] The association of laparoscopic findings and staging of the condition were found to be strong based on Endometriotic spotting and early diagnosis of endometriosis. Similar study also proved with presence of endometrioma, pelvic adhesions and blocked tubes were seen in reproductive age group.[13,20]

Endometriosis epidemiological study assessed a higher percentage of women with bilateral endometriotic cyst diagnosed by the laparoscopic findings. Regarding to this result significant predominance were reported pertaining to the clinical history of the patient nearly one third of the women who presented with bilateral endometriotic cysts.[24]

CONCLUSION

Endometriosis had been a complex disorder from both the clinicians and patients view in terms of symptoms and diagnosis. This study concludes that women in their reproductive age are highly affected by endometriosis leading to primary infertility. It is difficult to predict the stages of endometriosis correlating to age of endometriosis women. The findings of the laparoscopic aided in the prediction of the stages and diagnose of endometriosis spots. This is the widely preferred technique for diagnosis of endometriosis. Further, this study found a part of the women affected by bilateral endometriotic cyst even in a small population.

ACKNOWLEDGMENTS

This present epidemiological study was supported by DST-WOS-A, New Delhi. The historical data collected after approval had been obtained from the Obstetrics and gynecologist of Ramakrishna medical centre. We thank to Dr. T. Ramani Devi and Dr. Anchana Devi, for providing the summaries of patient details and alteration of manuscript information.

Funding: funded by DST-WOS-A, New Delhi. Reference No. SR/WOS-A/LS-551/2012(G) dated 25.07.2013.
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Mohan R, Ramanidevi T, Kadalmani B. Cohort study of endometriosis in south Indian district. Int J Reprod Contracept Obstet Gynecol 2016;5:3883-8.