Original Article

Evaluation of Diagnostic Visual Findings at Laparoscopy in Endometriosis

Saghar Salehpour, M.D.[1*], Hanieh Zhaam, M.D.[2], Mahnaz Hakimifard, M.D.[3],
Leila Khalili, M.D.[3], Yaedollah Azar Gashb, Ph.D.[4]

1. Gynecology Department, Infertility and Reproductive Health Research Center (IRHRC),
Shaheed Beheshti Medical University
2. Pathology Department, Shaheed Beheshti Medical University
3. Gynecology Department, Shaheed Beheshti Medical University
4. Research Consultant, Shaheed Beheshti Medical University

Abstract

Background: Endometriosis has been widely implicated as one of the causes of chronic pelvic pain, dysmenorrhea and infertility. The purpose of our study was to define the presumed correlation between visual and histologic diagnostic features of endometriosis based on the peritoneal findings identified in laparoscopy as a diagnostic trial with a standardized technique. So, all the specimens including complete excised lesions suggestive of endometriosis and systematic biopsies of normal appearing pelvic peritoneum were analyzed. This study was performed in Mahdieh hospital and IRHRC[1] between 2004 and 2005.

Materials and Methods: A diagnostic study of 30 patients (14 to 45 years) undergoing diagnostic laparoscopy for the evaluation of chronic pelvic pain, infertility, dysmenorrhea and dyspareunia was carried out (average age was 28.6±5.14).

All areas suggestive of endometriosis were excised and examined pathologically. Peritoneal biopsy specimens were obtained from areas of normal appearing peritoneum to rule out microscopic endometriosis.

The positive predictive value, sensitivity, negative predictive value and specificity were determined for identified endometriosis versus the histological findings.

Results: The mean prevalence of abnormalities visually consistent with endometriosis was 63% while 42% confirmed histologically. The positive predictive value was 42.1%, sensitivity 88.8%, negative predictive 90.9% and specificity 47.6% for visual versus histological diagnosis of endometriosis.

Conclusion: A diagnosis of endometriosis should be established only after histologic confirmation.

Key words: Endometriosis Diagnosis, Laparoscopy, Histopathology

Introduction

Endometriosis is one of the most important and chronic diseases that can cause some problems like chronic pelvic pain, dysmenorrhea, infertility, subfertility and dyspareunia (1, 2). In women within range of 15 to 45 years of age endometriosis is defined as the presence of endometrial tissue (gland and stroma) outside the uterus (3).

It is a benign disease whose clinical presentations are varied and is susceptible to progress and recur (1, 3). It is estimated to occur in 7-10% of reproductive age women in the USA (2-4). Endometriosis implantation mostly found in pelvic viscera & peritoneum. Rarely endometriosis implantation is seen in extra

peritoneum (3).

Clinical presentations include chronic pelvic pain, infertility, subfertility, dysmenorrhea, dyspareunia and also can be associated with significant gastrointestinal symptoms (pain, nausea, vomiting, early satiety, bloating and distention, altered bowel habits). Also, endometriosis may be asymptomatic. Three theories have been proposed to explain the histologic genesis of endometriosis:

1. Ectopic transplantation of endometrial tissue
2. Cellomic metaplasia
3. Induction theory

Women with shorter intervals between menstruation periods and longer duration of

menses are at higher risk for endometriosis. Obesity and smoking are associated with the low risk of endometriosis (3). Many diagnostic methods are applied to assess it including transvaginal ultrasonography using Doppler effect, level of CA125, MRI computed tomography, laparoscopy and histopathological confirmation of lesion in the peritoneum and pelvic viscera, that the latter is the standard technique for a definitive diagnosis. There are multiple studies for power determination of each diagnostic method (5-7). In the studies for power determination diagnosis by visual inspection, histological confirmation of the laparoscopic impression is essential for the diagnosis of endometriosis. While endometriosis diagnosed laparoscopically, histological confirmation was obtained in only 50% in some of previous studies (5-7).

In one study in Kiel university in 2004 high percentage of endometriosis cases diagnosed by visual inspection have been confirmed with histology (84.1%) and they concluded that laparoscopy is the easiest way for diagnosis V which can be confirmed with histology (8). Our study is designed for evaluation of diagnostic power of visual inspection according to histopathology. The present study which is the first one in Iran has been carried out in Gynecology Clinic of Mahdieh Hospital.

Materials and Methods

This was a prospective observational study of all women in reproductive age who referred to the Department of Clinical Gynecology of Mahdieh hospital for evaluation of chronic pelvic pain, infertility, dysmenorrhea, and dyspareunia. The sample size according to p=90%, d=19.7%, α=5%, is 30 persons. After history taking and physical exam 30 patients who were suspected of endometriosis were chosen for the study. Other causes of pelvic pain & patients who had recently completed therapy with gonadotropin releasing hormone agonists, OCP or Danazol in last 6 month were excluded.

After explanation session with the patients to explain method, complete questionnaires and consents were obtained to do diagnostic laparoscopy without charge. Age of the patients ranged from 21 to 48 (mean age, 28.6±5.14). Data were collected through history taking, physical exam, laparoscopic inspection and histological evaluation. Biopsy of peritoneum and viscera include right and left fossa ovary, posterior cul de sac, uterosacral ligament and right and left ovary, were done in all the patients. Pathologic examination was performed in pathology laboratory of Mahdieh hospital. Finally variables analyzed by SPSS software and sensitivity, specificity, Positive Predictive Value (PPV), Negative Predictive Value (NPV) were calculated for the diagnostic characteristics.

Results

The sample consisted of 30 patients who underwent laparoscopic evaluation. Age range was from 21 to 42 years (mean age, 28.6±5.14 years). Some patients presented with a primary complaint of chronic pelvic pain (13.3%) dysmenorrhea (40%), primary infertility (70%) and secondary infertility (26%) which are figured in Table 1.

Table 1: Prevalence of complaints for endometriosis

Complaint	Patients (n=30)	
	No.	%
Promary infertility	21	70
Secondary infertility	8	26
Dysmenorrhea	23	76.6
Dyspareunia	12	40
Chronic of pelvic pain	4	13.3

For all patient diagnostic laparoscopy was done. Either areas of normal-appearing pelvic peritoneum and abnormal appearing peritoneum were sampled with multiple, site-specific biopsies. These sites included the posterior areas of the cul-de-sac 83.3%, right ovarian fossae 83.3 %, left ovarian fossae 76.6%, right ovary 20%, left ovary 13.3%, and the right uterosacral ligaments 26.6 %, the left uterosacral ligaments 6.6%. (Table 2).

Table 2: Prevalence of biopsy sites

Complaint	No.	%
Fossa ovarica, right	25	83.3
Fossa ovarica, left	23	76.6
Posterior cul-de-sac	25	83.3
Ovarian right	6	20
Ovarian left	4	13.3
Utersacral ligament, right	8	26.6
Uterosacral ligament, left	2	6.6

Patients described as abnormal cases who had findings on peritoneum in visual examination. Specific visual findings include hemorrhagic lesion (78.9%), petechial lesion (73.6%), adhesion (57.8%), peritoneal yellow lesion (42%), cyst (26.3%), powder burn lesion 10.5% and peritoneal brown lesion 10.5%. (Table 3).

In 19 cases with abnormal appearing peritoneum for endometriosis lesion were seen in posterior cul de sac (84.2%), right fossa ovarica (78.9%), left fossa ovarica (63%), right ovary (31.5%), right uterosacral (26.3%), left ovary (21%), left uterosacral (5.2%) (Table 4).

Table3: Prevalence of specific visual findings in patient with abnormal appearing peritoneum

Visual finding	Patients No.	(%)
hemorrhagic lesion	15	78.9
petechial lesion	14	73.6
Adhesion	11	57.8
cyst	5	26.3
powder–burn lesion	2	10.5
Peritoneal Yellow lesion	8	42
Peritoneal brown lesion	2	10.5

Table 4: Prevalence of specific visual findings

Positive Visual finding	Patients No.	(%)
Posterior cul-de-sac	16	84.2
right Fossa ovarica	15	78.9
left Fossa ovarica	12	63
right ovary	6	31.5
left ovary	4	21
right Uterosacral	5	26.3
left Uterosacral	1	5.2
Positive histology	**Patients No.**	**(%)**
Posterior cul-de-sac	5	55.5
right Fossa ovarica	2	22.2
left Fossa ovarica	3	33.3
right ovary	2	22.2
left ovary	2	22.2

Among 19 cases with abnormal appearing peritoneum for endometriosis, 8 cases were confirmed by histopathology. In one case although the visual view was negative, existence of disease was confirmed by histopathology (one microscopic endometriosis). Areas in which endometriosis were confirmed by histopathological evaluation include posterior cul de sac (55.5%), left fossa ovarica (33.3%), right fossa ovarica (22.2%), right ovary (22.2%), and right uterosacral (22.2%) (Table 5).

Sensitivity and specificity of abnormal visual findings were estimated 88.8 %.(Table 4).

Table 5: Site of biopsy

Histopathology / Visual	Positive	Negative	
Positive	8	11	19
Negative	1	10	11
	9	21	30

The results were tested by "Kapa Test" to define the correlation between the visual and histological diagnoses of endometriosis with P-value =0,057 that was not significantly different. In MC Nemar's methods also the equality of visual and histology methods were rejected (p=0.006).

Discussion

In our study, visual diagnosis of endometriosis doesn't have necessarily diagnostic power. Although the first and simplest way in surgical endometrial diagnosis is visualization of typical lesions during laparoscopic evaluations of the pelvic organs and peritoneum, but final diagnosis of endometriosis should be established only after histologic confirmation (1-3). Visual diagnosis needs experienced surgeon to detect multiple endometrial lesions, although there is poor correlation between the visual and histologic diagnoses of endometriosis. (3)

In our study sample consisting 30 patients who underwent laparoscopic evaluation, the prevalence of visual diagnosis including all types of visually detected abnormalities in peritoneum was 63% (19 patients). In another study done in Scotland by Walter (1997-1999), from 44 cases suspected to have endometriosis, only 36% had visual abnormal lesions (5).

The prevalence of hisologically diagnosed endometriosis for our patients with visual diagnosis of endometriosis was 42% (8 patients), comparable to the Walter results in which only 18% had histological confirmation. In a case study done in 2004 at the Gynecology and Obstetric Department of Kiel University to define the correlation between the visual and histological diagnoses of endometriosis 84.1% of visual diagnoses were confirmed by histopathology. Diversity of this study with the others might be due to outnumbered patients under evaluation or applied technique for visual diagnosis and histopathology and/or experiences of surgeon

(8).

In another study done in 2003 to define accuracy of endometriosis laparoscopically diagnosis at Kiel university, among 264 cases visually suspected to endometriosis, only 142 cases (53.8%) had positive histopathology. So, it has been found that by consideration of multi-lesions endometriosis in visual diagnosis and presence of these lesions in normal cases to prevent unnecessary treatment, a diagnosis of endometriosis should be established only after histological confirmation.

In 2005 in Toronto University another study on 54 patients carried out with laparoscopic evaluation that 54% of visual diagnoses were confirmed by histopathology. So, histological confirmation in endometriosis diagnosis is clearly needed. There is not any prominent difference in both latter studies with the present research, depicting the accuracy of our study.

Among 11 cases which have negative visual finding, histopathology result of just one of them was confirmed as completely free of disease (90.9%). But, in one case microscopically endometriosis was reported (9%) which complied with the reference books (6-13%). In another study in 2006 at China the rate of microscopically endometriosis was 18.5% which implied microscopically lesions were not rare evidence in endometriosis (10). In the study of 1996 by Balash Et al, existence of microscopically endometriosis was approved (11).

Visually detected abnormalities were most common in the posterior cul-de-sac also most common histological confirmation was this area. This result was similar to Walter's study (5). According to this research sensitivity and specificity of visual findings was 88.8% & 47.8% respectively.

These results were comparable with the study done in 2006 in China, but in comparison with the Walter's study it had less sensitivity and specificity (5, 10). (Sensitivity and specificity of Walter's study was 97%, 77% respectively). Positive predictive value (PPV) of visual findings was 42.1% and Negative predictive value (NPV) was 90.9%, same as results of Walter's study in Scatlands, but compared to the 2006 study in China had higher amount. (5, 10) (Walter's study: PPV=45%, NPV=99%, the study that done 2006 in china: PPV=45%, NPV=99%).

Our results suggest that visual diagnosis have a high Negative predictive value for diagnosis of endometriosis, and normal appearance of peritoneum is highly reliable for the absence of endometriosis (91%), however microscopic endometriosis must be considerable.

On the other hand, visual diagnosis has a low predictive value (PPV) for diagnosing endometriosis and definitive diagnosis of endometriosis has not been reliable by visualization of typical or atypical lesions.

In summary, we recommend histological evaluation of visually detected abnormalities suggestive of endometriosis before a definitive diagnosis is made. Because of diversity of endometrial lesions, the diagnosis of endometriosis should be established only after histological confirmation.

Conclusion

Considering that this research is done for the first time in Iran, we suggest that broader research will be done in order to obtain more valid statistics about the power of visual diagnostic tools that may assure us in our decision to replace it.

References

1. Leon Speroff, Marc A. Clinical Gynecologc Endocrinology and Infertility, 7th Edition. Philadelphia. Lippincottwilliams and Wilkins. 2005; 1103-1125

2. Jonathan S. Berek M. Novak's Gynecology, 13th Edition. Philadelphia. Lippincott Williams and Wilkins. 2002; 931-972

3. Mounsey AL, Wilgus A, Slawson DC. Diagnosis and managment of endometriosis. American family physician 2006; 74(4): 594-602

4. Wellbery C. Diagnosis and treatment of endometriosis. American family physician 1999; 60(6): 1753-1768

5. Walter J, Hentz JG, magtibay PM, cornella JL, Magrina JF. Correlation between histologic and visual findings at laparoscopy . American Journal of obstetrics and gynecology 2001; 184(7): 1407-1413

6. Mettler L, Schollmeyer T, Lehmann-Willenbrock E, Schüppler U, Schmutzler A, Shukla D, Zavala A, Lewin A. Accuracy of laparoscopic diagnosis of endometriosis. JSLS 2003; 7(1): 15-18

7. Marchino GL, Gennarelli G, Enria R, Bongioanni F, Lipari G, Massobrio M. Diagnosis of pelvic endometriosis with use of macroscopic versus histologic findings . Fertile Steril 2005; 84(1): 12-15

8. Schollmeyer T, pandit K, schmutzler A, Mettler L. Correlation of endoscopic interpretation of endometriosis with histological verification. Clin Exp Obstet. Gynecol 2004; 31(2): 107-109

9. Spaczynski RZ, Duleba AI. Diagnosis of endometriosis. Semin Reprod Med 2003; 21(2): 193-208

10. Leng JH, Lang TH, Zhao XY, Li HY, Guo LN, Cui QC. Visual and histologic analysis of laparoscopic diagnosis of endometriosis. Zhonghua Fu chan Ke za zhi 2006; 41(2): 111-113

11. Balasch J, Creus M, Fábregues F, Carmona F, Ordi J, Martinez-Román S, Vanrell JA. Visible and non-visible endometriosis at laparoscopy in fertile and infertile women and in patients with chronic pelvic pain: a prospective study. Hum Reprod. 1996; 11(2): 387-391