Research Article

The Association between Endometriosis Appearance during Laparoscopic Surgery and Pain Characteristic in Pelvic Endometriosis

Hubungan Tampilan Susukan Endometriosis pada saat Pembedahan Laparoskopik dengan Karakteristik Nyeri pada Endometriosis Pelvik

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Abstract

Objective : To evaluate the correlation between the American Society of Reproductive Medicine (ASRM) score in endometriosis and severity pelvic pain in a group of women with endometriosis.

Methods: A total of 131 patients with pelvic pain who: conduct laparoscopy for diagnosis and therapy of endometriosis, have pain symptoms>3 months, and absence of pelvic anomalies. Dysmenorrhea, deep dyspareunia, dyschezia, dysuria, and chronic pelvic pain were evaluated using a 10-point visual analogue scale. The data was collected by assessing the medical record, and retrospective analysis was performed. Disease stage according to the American Society of Reproductive Medicine, the presence of adhesion, lesion type (Deep Infiltrating Endometriosis (DIE) or without DIE), and severity of pain symptoms were analysed by Spearman analysis. Different VAS between DIE vs non DIE group was analysed by Mann-Whitney analysis.

Results : Stage IV endometriosis accounts for 79.4%. Based on the macroscopic appearance, ovarian endometriosis accounts for 92.4%, peritoneal endometriosis 82.4%, DIE was 40.5%, and adenomyosis was 19.1%. There was significant correlation between total ASRM, ovarian endometriosis, peritoneal lesion, Douglas pouch obliteration, adnexal adhesion score and VAS dysmenorrhea (r=0.303; 0.187; 0.203; 0.278; 0.266, p<0.05). There was significant VAS difference of DIE vs non DIE group; the difference was on dyspareunia (5.18±2.4 and 4.58±1.0, p<0.001] and dyschezia [5.28±2.2 and 4.86±0.7,p<0.001]

Conclusions : There was a positive correlation between ovarian endometriosis score and severity of dysmenorrhea. There was also a difference in the degree of endometriosis-associated pain between DIE and non DIE group.

Keywords : endometriosis, deep infiltrating endometriosis, dysmenorrhea, dyspareunia, dyschezia

Abstrak

Tujuan : *Untuk mencari hubungan antara skor endometriosis ASRM dan karakteristik nyeri pelvik pada pasien endometriosis*

Metode : *Sebanyak 131 pasien dengan nyeri pelvik yang menjalani laparoskopi untuk diagnosis dan terapi endometriosis, memiliki nyeri > 3 bulan, dan tidak mengalami kelainan organ pelvis. Dilakukan evaluasi terhadap dismenorea, dispareunia dalam, diskezia, disuria, dan nyeri pelvic kronik dengan menggunakan nilai 1-10 dari skala analog visual. Penelitian ini dilakukan di Rumah Sakit Umum Pusat Rujukan Nasional Dr. Cipto Mangunkusumo, Jakarta. Stadium endometriosis berdasarkan American Society of Reproductive Medicine, kejadian adhesi, jenis lesi (ada Endometriosis Susukan Dalam/ESD atau tanpa ESD), dan derajat keparahan nyeri dianalisis dengan analisis Spearman. Perbedaan skala nyeri antara ESD dan non ESD dianalisis dengan metode Mann-Whitney.*

Hasil : *Sebanyak 79,4% pasien tergolong ke dalam endometriosis stadium IV. Berdasarkan tampilan makroskopik, endometriosis ovarium terdapat pada 92,4%, endometriosis peritoneal 82,4%, ESD 40,5%, dan adenomiosis pada 19,1%. Terdapat korelasi positif bermakna antara skor ASRM total, sub-skorkista endometriosis, endometriosis superfisial, obliterasi kavum douglas, dan adhesi adheksa dengan VAS dismenorea (r=0,303; 0,187; 0,203; 0,278; 0,266, p<0,05). Pada kelompok ESD dan tanpa ESD, didapatkan perbedaan VAS dismenorea, dispareunia dalam, diskezia, dan nyeri pelvic kronik yang bermakna (6,13±1.7 dan 5,95±1,7, p = 0,560 ; 5,18±2.4 dan 4,58±1,0, p < 0,001; 5,28±2,2 dan 4,86±0,7 , p < 0,001; 2,20±2,8 dan 0,60±1,8, p <0,001)*

Kesimpulan : *Terdapat korelasi positif bermakna antara skor ASRM dengan VAS dismenorea. Terdapat perbedaan VAS dismenorea, dyspareunia dalam, diskezia, dan nyeri pelvic kronik pada kelompok ESD dan tanpa ESD*

Kata kunci : *endometriosis, endometriosis susukan dalam, dismenorea, dispareunia dalam, diskezia*

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INTRODUCTION

Controversies on the relationship between endometriosis stage, adhesion, lesion type, and severity of pelvic pain remain for years, even though clinical experience has connected those with the severity of pelvic pain. Endometriosis is characterised by the presence of endometrial tissue outside the uterine cavity that may cause pain and/or infertility.[1] Endometriosis is strongly associated with a decrease in the quality of life of women due to various problems it causes, such as endometriosis pain consisting of dysmenorrhea, dyspareunia, and chronic pelvic pain. Symptoms of the most common pain in endometriosis are dysmenorrhea, chronic pelvic pain, and deep dyspareunia.[2,3]In Dr. Cipto Mangunkusumo General Hospital, chronic pelvic pain account for 82.5% cases, dysmenorrhea 81%, and infertility 33.7%.[4]

The relationship between endometriosis and pelvic pain has been widely known, but the explanation of why this may occur is still not clear. Severe pain could be found in patients with mild endometriosis, but on the contrary, insignificant pain was found in patients with severe endometriosis. Therefore, based on the explanation above, the research was conducted to find the correlation between the appearance of endometriosis and the characteristics of pelvic pain. Endometriosis appearance includes American Society of Reproductive Medicine (ASRM) scores, adhesion events, Douglas pouch obliteration, and the presence of Deep Infiltrating Endometriosis (DIE). Especially for DIE, in addition to dysmenorrhea, will also be assessed for susceptibility to deep dyspareunia, chronic pelvic pain, dyschezia, and dysuria. This study is expected to clarify factors related to pain characteristics in endometriosis patients so that effective endometriosis pain management can be applied and deterioration in the quality of life of patients is preventable.

METHODS

This research used retrospective design with correlative analysis between two numeric variables. This research was done in Dr. CiptoMangunkusumoGeneral Hospital, Jakarta. Data entry was done by collecting data from the medical record from the subjects experienced laparoscopy procedure due to endometriosis from the year 2012 – 2016. Inclusion criteria were: women on reproductive age (18-40 years old) who did laparoscopy surgery from 2012 to 2016, and diagnosed as endometriosis from based on history taking, physical and supporting examination. Exclusion criteria were: had disease located on the uterus, adnexa, or another organ that could cause pelvic pain, for example, pelvic inflammatory disease, genital malformation, malignancy and the second exclusion criteria was being diagnosed as neurosis or psychiatric disorder.

This research used secondary data from the medical record completed by Gynecology residences who were in charge of Gynecology Clinic. On history taking, the patients were asked to classify the severity of pelvic pain using 1 to 10 Visual Analogue Scale (VAS) which described the most left side as the less pain and the most right side as the worst pain felt by the patients. Next step was data collection from laparoscopy operation report and video which showed intraoperative endometrial lesion characteristic. The researcher then took closer at each video and fulfilled the ASRM questionnaire to calculate the ASRM score with the detailed description of each lesion.

ASRM Questionnaire

American Society for Reproductive Medicine (ASRM) has introduced a classification system based on laparoscopic findings. The scoring depends on size, depth, location, and adhesion of the lesion with its surrounding structures.

Statistical Analysis

Statistical analysis was performed by using SPSS 23® software for MacBook® operating system. The analysis was done by bivariate analysis Spearman correlation test and Mann-Whitney test.

RESULTS

Subjects were those who had dysmenorrhea and underwent laparoscopy procedure in Dr. Cipto Mangunkusumo General Hospital in year 2012 – 2016. Total subject enrolled was 164, from which, 131 fulfilled inclusion criteria and were analysed.

In this research, the average age was 33.5 years old, 13 years old was the highest frequency of menarche, and average BMI was 22.8. 64.1% was included in infertility case (Table 1).

Table 1. Subjects' Characteristics

Variable	n	Proportion (%)	Mean (SD) Median	Min	Max
Age (years)	131		33.55(7,98)		
Parity			0.68	0	5
Menarche (years)			13	9	17
BMI (kg/m2)			22.8	14.3	36
Endometriosis associated pain					
Dysmenorrhea	131	100			
Deep dyspareunia	22	16.8			
Dyschezia	13	9.9			
Dysuria	1	0.8			
Chronic pelvic pain	31	23.7			
Severity of pain (VAS)					
Dysmenorrhea			6	2	9
Deep dyspareunia			5	3	7
Dyschezia			5	4	6
Dysuria			4		
Chronic pelvic pain			5	2	8
Macroscopic appearance					
Ovarian endometriosis cyst	121	92.4			
Peritoneal endometriosis	108	82.4			
Deep Infiltrating Endometriosis (DIE)	53	40.5			
Adenomyosis	25	19.1			
Endometriosis stage based on ASRM score	2	1.5			
Stage I (minimal)	3	2.3			
Stage II (mild)	26	16.8			
Stage III (moderate)	104	79.4			
Stage IV (severe)					
ASRM score description					
Total ASRM score			86.4(44.2)		
Ovarian endometriosis subscore			31.2(11.6)		
Peritoneal lesion subscore			6.2(5.3)		
Douglas pouch obliteration subscore			20.5(19.2)		
Adnexal adhesion subscore			28.5(20.7)		

All of the subjects included had dysmenorrhea, followed by chronic pelvic pain as the second most common endometriosis-associated pain (23.7%). Based on macroscopic appearance, 92.4% consisted of ovarian endometriosis cyst, 82.4% were peritoneal endometriosis, 40.5% were DIE, and 19.1% were adenomyosis. Majority cases (79.4%) were stage IV or severe endometriosis case. ASRM score was counted as total score and subscore. The subscore was divided into ovarian endometriosis, peritoneal lesion, Douglas pouch obliteration, and adnexal adhesion subscore.

Table 2 showed the correlation between ASRM score and severity of pelvic pain. There was a positive correlation between dysmenorrhea and any variable in ASRM score, the higher the score was, there were more severe pelvic pain with different degree of correlation. There was also a correlation between VAS dyspareunia and Douglas pouch obliteration, and chronic pelvic pain with peritoneal lesion.

Table 2. Correlation between ASRM score and severity of pelvic pain in VAS

Correlation[1]	r	*P-Value*
Total ASRM score and VAS of dysmenorrhea	0.303	<0.001
Ovarian endometriosis subscore and VAS of dysmenorrhea	0.187	0.032
Peritoneal lesion subscore and VAS of dysmenorrhea	0.203	0.02
Douglas pouch obliteration subscore and VAS of dysmenorrhea	0.278	0.001
Adnexal adhesion subscore and VAS of dysmenorrhea	0.266	0.002
Douglas pouch obliteration subscore and VAS of dyspareunia	0.195	0.026
Peritoneal lesion subscore and VAS of chronic pelvic pain	0.180	0.04

[1]*Spearman correlation test*

In table 3, there was a statistically significant VAS difference on deep dyspareunia, dyschezia, and chronic pelvic pain between DIE and non-DIE group. VAS comparison of dysmenorrhea, deep dyspareunia, dyschezia, and chronic pelvic pain were 5.18±2.4 and 4.58±1.0, p < 0.001; 5.28±2.2 and 4.86±0.7, p < 0.001; 2.20±2.8 and0.60±1.8, p <0.001.

Table 3. VAS difference between DIE and non-DIE group[2]

Variable	n	VAS dysmenorrhea		VAS deep dyspareunia		VAS dyschezia		VAS chronic pelvic pain	
		Value	P-value	Value	P-value	Value	P-value	Value	P-value
DIE	53	6.13±1.7	0.560	5.18±2.4	<0.001	5.28±2.2	<0.001	2.20±2.8	<0.001
Non DIE	78	5.95±1.7		4.58±1.0		4.86±0.7		0.60±1.8	

[2] *Mann-Whitney test*

DISCUSSION

In this study, the age of patients with dysmenorrhea with suspicion of endometriosis was age 30-39 years, i.e. 52%. A similar prevalence was found in a study conducted by Ferrero et al. who stated that age group 30-39 was the highest percentage of dysmenorrhea obtained with suspicion toward endometriosis, which was 52.9%.[5] In this study, the mean age of patients was 33.55 ± 7.98 years. A similar average was found in the Parazzini et al. study, which was 33.69 years.[6]

In addition to dysmenorrhea, infertility became a common complaint in endometriosis patients. In this study, 64.1% of patients came with a major complaint of infertility, the prevalence gained in this study is smaller than the prevalence obtained from Ferrero et al research that is 64.7%.5 This may be due to the Indonesia insurance referral system that makes endometriosis patients with infertility can be handled at a referral centre other than Dr Cipto Mangunkusumo General Hospital.

There was a positive correlation between the Douglas pouch obliteration subscore and VAS dysmenorrhea, dyspareunia, dyschezia and chronic pelvic pain with correlation coefficient (r) and p respectively, i.e., r = 0.31 and p <0.05; r = 0.366 and p <0.05; r = 0.328 and p <0.05; and r = 0.293 and p <0.05. Ideally, the classification of the macroscopic type of endometriosis should be endometrioma alone, peritoneal endometriosis only, and endometrioma together with peritoneal endometriosis. However, in this study it is difficult to find patients who have only one type of lesion, as more than 70% belong to the classification of stage IV ASRM that has a macroscopic variety of lesions, in one patient may be found endometrioma, peritoneal lesions, and DIE simultaneously. In addition, endometriosis lesions are more easily detected by ultrasound examination than peritoneal lesions or DIE, thus leading to laparoscopic action performed in patients with ovarian endometriosis lesions rather than patients with peritoneal lesions or ESD. Both of these can be biased in the study.

In the study of Kaya et al., it was explained that there is a possibility of pelvic adhesion more im-

portant than cyst diameter as the cause of pain. This is indicated by the large size of endometrioma unrelated to the extent of adhesion.[7]In a study conducted by Chopin et al. involving 239 patients stated that the degree of dysmenorrhea was not associated with endometriosis cysts, but more associated with DIE in the rectum.[8] Vercellini et al. also showed that dysmenorrhea is less common in endometrial cysts than in lesions at other sites.[9] Porpora et al. mention that there is an association between dysmenorrhea and endometriosis by univariate analysis, but this association is not available after adjustment for confounding factors, and further analysis indicates that the degree of pain was associated with adhesions in the ovarian fossa rather than the size of the cyst itself.[10]In addition, in the study conducted by Parazzini et al., there was no clear association between stage, location and morphological characteristics between pelvic endometriosis and pain.[11]

In the DIE and non-DIE groups, there were significant differences in deep dyspareunia, dyschezia, and chronic pelvic pain. Based on several studies, the mechanisms responsible for the severity of endometriosis-associated pain include the interaction between ectopic endometriosis implants, nociceptors, and nerve fibres. The most likely explanation of the relationship between symptom and location of pain was found in histological studies. DIE implants can infiltrate the surrounding tissues and cause subperitoneal nerve compression or infiltration.[12] In retro cervical DIE, this area is often exposed at the time of penetration, that can cause deep dyspareunia. In addition, endometriosis lesions have neurotropic properties associated with increased expression of nerve growth factor compared with peritoneal and ovarian implants.[13] Therefore, in laparoscopy, it is essential to conduct systematic explorations to see the presence of DIE and peritoneal endometriosis because both types of endometriosis can cause pain in the patient.

This study shows that with laparoscopy we can show that severe pain could occur in patients with low ASRM score and vice versa. For example, in bilateral endometriomas with a diameter of more than 3 cm, the ASRM score will be 40, but may not lead to a dominant pain complaint because pathophysiology of pain is associated with neurotrophic pain-causing fibres less commonly present in endometrioma. Severe pelvic pain is associated with DIE; however, the degree of depth of endometriosis does not affect the ASRM stage. This makes the ASRM scoring system does not always correlate with the severity of pain. Most endometriosis patients experience dysmenorrhea and dyspareunia, but some do not experience pain at all. This can be due to pain in endometriosis not only due to the presence or absence of nerve fibres but also determined by the type of nerve fibres or molecules present in endometriosis lesions. Several molecules can sensitise the nerve fibres so that the pain does not arise.[14]

The clinical implication of this finding is that if in anamnesis there is one of the deep dyspareunia, dyschezia or chronic pelvic pain, it must be followed up by a careful physical examination and then followed by laparoscopy by looking for lesions that are likely to cause pain such as adhesions in the fossa ovarian, DIE, and peritoneal lesions. If in anamnesis there is one of the deep dyspareunia, dyschezia, or chronic pelvic pain but in physical examination there is no DIE nodule, this may be due to the anatomical location of the lesion is difficult to reach with the fingers such as the nodule on the bladder or in the sigmoid which is located far from the anal canal, if it happens like this transvaginal ultrasound could be done.

CONCLUSION

Based on macroscopic appearance, 92.4% consisted of ovarian endometriosis cyst, 82.4% were peritoneal endometriosis, 40.5% were DIE, and 19.1% were adenomyosis. Majority cases (79.4%) were stage IV or severe endometriosis case. There was correlation between dysmenorrhea and any kind of variable in ASRM score, the higher the score was, there were more severe pelvic pain with different degree of correlation ($r = 0.31$ and $p < 0.05$; $r = 0.366$ and $p < 0.05$; $r = 0.328$ and $p < 0.05$; $r = 0.293$ and $p < 0.05$). There was also correlation between VAS dyspareunia and Douglas pouch obliteration, and chronic pelvic pain with peritoneal lesion ($r = 0.195$ and $p < 0.026$; $r = 0.180$ and $p < 0.04$). There was statistically significant VAS difference on deep dyspareunia, dyschezia, and chronic pelvic pain between DIE and non-DIE group (5.18 ± 2.4 and 4.58 ± 1.0, $p < 0.001$; 5.28 ± 2.2 and 4.86 ± 0.7, $p < 0.001$; 2.20 ± 2.8 and 0.60 ± 1.8, $p < 0.001$).

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