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Research Article

Association between menarche age and menstrual disorder with the incidence of uterine fibroid in medan, Indonesia: based on hospital data

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ABSTRACT

Background: Uterine fibroids are benign, monoclonal tumors of the smooth muscle cells found in the human uterus. The incidence of uterine fibroid in Indonesia is between 2.39% - 11.7% in all gynecology inpatient. Despite the fact that their cause is still unknown, there is considerable evidence that estrogens and progestogens proliferate tumor growth, as the fibroids rarely appear before menarche and regress after menopause.
Methods: An observational analytic study with case control approach. Total sample from this study was 498 people, with 249 cases and 249 controls. The samples were collected through purposive sampling. The study was conducted in the medical record division of Adam Malik General Hospital Medan. Results from the study were analyzed with chi square.
Results: The result of this study demonstrated an association between menarche age with uterine fibroid incidence, with a p-value < 0.05, and odds ratio = 2.487 (CI 1.585-3.902). This indicate that the incidence of uterine fibroid is 2.5 greater in women with menarche age of < 10 years old. P-value < 0.05 and odds ratio = 0.258 (CI 0.178-0.375) were obtained from the association between menstrual disorder and uterine fibroid incidence.
Conclusions: The result of this study demonstrates a significant association correlation between menarche age and the development of uterine fibroid. Early menarche age increases risk of uterine fibroid incidence, whereas menstrual disorder is more likely a clinical manifestation of uterine fibroid, rather than a risk factor.

Keywords: Menarche age, Menstrual disorder, Uterine fibroid

INTRODUCTION

Uterine fibroids (myomas or leiomyomas) are benign, monoclonal tumors of the smooth muscle cells found in the human uterus.[1,2] Despite the fact that their cause is still unknown, there is considerable evidence that estrogens and progestogens proliferate tumor growth,[3,4] as the fibroids rarely appear before menarche and regress after menopause.[5,6] Uterine fibroids are the most common benign tumors in women and the leading indication for hysterectomies in the USA,[7,8] nevertheless, epidemiological data on fibroid prevalence and incidence are limited and reliable population-based research is lacking.[9] Available data are difficult to compare due to differences in the study population and screening methods. Prevalence data range from 5% to 21%.[10-16] The majority of women with uterine fibroids are asymptomatic, consequently get less clinical attention and fibroid tumors often remain undiagnosed.[17,18] Symptomatic women typically complain about abnormal uterine bleeding, specifically in terms of heavy and prolonged bleeding.[19] Early age at menarche has been associated with several health complications, including higher risk for obesity, cardiovascular disease, metabolic syndrome, type 2 diabetes, preeclampsia, and various forms of cancer.[20-29] Prior studies have identified early

age at menarche as a risk factor for the development of uterine leiomyoma, or fibroids.[30-35] The incidence of uterine fibroid in Indonesia was found to be between 2.39% - 11.7% in all of gynecology inpatient.[1] About 20% or one in five women suffer from uterine fibroid. Therefore, routine gynecological examination is very important for women in reproductive age.[36] Indonesia is an archipelago country with many remote and rural areas which is not covered by medical facilities. Moreover, the average level of education and economy in Indonesia is still low, affecting the availability and affordability of medical examination. By screening the patient based on risk factor (menarche age), targeted gynecological examination for uterine fibroid could be done. Based on a preliminary survey conducted at Adam Malik General Hospital Medan, incidence of uterine fibroid increased from 110 patients in 2011 to 168 patients in 2012.

METHODS

This study was conducted in the medical record division of Adam Malik General Hospital Medan, Indonesia from 20 March 2012 to 19 April 2014.

This is an observational analytic study with a case control approach. The samples in this study were women diagnosed with benign gynecological tumor based on post surgery histopathological result at Adam Malik General Hospital Medan in 2012-2014 who met the inclusion criteria, such as age >20 years, no familial history of uterine fibroid and willing to participate in the study. Menstrual disorder symptoms were obtained from the patient's history in medical record. Definition of menstrual disorder in this study is any alteration in menstrual pattern including heavy menstrual bleeding, prolonged menstruation or menstrual pain.

Total sample from this study was 498 people, with 249 uterine fibroid cases and 249 patients with other benign gynecological tumor. The samples were collected through purposive sampling.

The independent variables in this study were menarche age and menstrual disorder. The dependent variables were uterine fibroid. The analysis that used were univariate analysis and bivariate analysis. Univariate analysis was completed using frequency distribution table, while bivariate analysis was completed using chi square test and then the risk factor was subsequently analysed using odds ratio. All of the statistical analysis in this study was performed using SPSS™ program.

RESULTS

Based on the study conducted at Adam Malik General Hospital Medan in 2012 - 2014, the following results were obtained:

Based on Table 1, from 249 uterine fibroid patients in this study, 177 patients (35.5%) had menarche at >10 years old, whereas the majority of patients with other benign tumor had menarche at >10 years old with 214 patients (43.0%)

Table 1: frequency distribution of benign gynecological tumor based on menarche age at H. Adam Malik General Hospital Medan in 2012-2014.

No	Menarche Age	Benign Gynecological Tumor					
		Uterine Fibroid		Non Fibroid		Total	
		F	%	F	%	F	%
1	< 10 Years Old	72	14.5	35	7.0	107	21.5
2	> 10 Years Old	177	35.5	214	43.0	391	78.5
	Total	249	50.0	249	50.0	498	100

Table 2: Frequency distribution of uterine fibroid incidence based on menstrual disorder at H. Adam Malik General Hospital Medan in 2012-2014.

No	Menstrual Disorder	Benign Gynecological Tumor					
		Uterine Fibroid		Non Fibroid		Total	
		F	%	F	%	F	%
1	Not present	90	18.1	171	34.3	261	52.4
2	Present	159	31.9	78	15.7	237	47.6
	Total	249	50.0	249	50.0	498	100

From table 2, the majority of fibroid patients experienced menstrual disorder with 159 patients (31.9%), whereas the majority of non fibroid group were without menstrual disorder with 171 patients (34.3%).

Table 3: Association between menarche age and uterine fibroid incidence at H. Adam Malik General Hospital Medan in 2012-2014.

No	Menarche Age	Benign Gynecological tumor						
		Uterine fibroid		Non Fibroid		P	OR	CI 95 %
		F	%	F	%			
1	< 10 Years Old	72	14.5	35	7			
2	> 10 Years Old	177	35.5	214	43	0.0001	2.487	1.585-3.902
	Total	249	50	249	50			

Table 4: Association between menstrual disorders and uterine fibroid incidence at H. Adam Malik General Hospital Medan in 2012-2014.

No	Menstrual Disorder	Benign Gynecological Tumor						
		Uterine Fibroid		Non Fibroid		P	OR	CI 95 %
		F	%	f	%			
1	Not Present	90	18.1	171	34.3			
2	Present	159	31.9	78	15.7	0.000	0.258	0.178-0.345
	Total	249	50	249	50			

Table 3 shows the association between menarche age and uterine fibroid incidence. A p-value < 0.0001 can be identified, signifying an association between menarche age and uterine fibroid incidence. An odds ratio of 2.487 (CI 1.585-3.902) denotes women with menarche at <10 years old have a 2.487 times higher chance of having uterine fibroid. Confidence interval of 1.585-3.902 supported the odds ratio interval with menarche and uterine fibroid.

Table 4 demonstrated the computer-analysed study results of association between menstrual disorders and uterine fibroid incidence. A p-value < 0.0001 can be identified, signifying an association of menstrual disorders in uterine fibroid and other benign gynecological tumor incidence. An odds ratio of 0.258 (CI 0.178-0.345) denotes women with menstrual disorder have a 0.258 times higher chance of having uterine fibroid. Confidence interval of 0.178-0.345 illustrated odds ratio interval. This mean that menstrual cycle is a protective factor for fibroid.

DISCUSSION

Fibroid developed in women with earlier and longer exposure to estrogen, such as in women with early menarche. The great amount of estrogen in the blood of women with fibroid and without fibroid were the same, however the amount of estradiol in women with fibroid were higher compared to women without fibroid. This is because women with uterine fibroid have a lesser amount of enzyme that could convert estradiol to estrone, therefore the amount of estradiol is greater and will enhance fibroid growth. This view is supported in a study by Victory et al which said that increase of uterine fibroid growth were a response of estrogen stimulus. Marshal et al and Faerstin stated significant increase in uterine fibroid incidence in women with menarche prior to 11 years old. The longer exposure to estrogen will increase uterine fibroid incidence. Early menarche (<10 years) were found to increase uterine fibroid's relative risk, and late menarche (>16 years) decreased uterine fibroids relative risk.[5]

CONCLUSION

Based on this study results, we can conclude that the majority of patient with uterine fibroid had menarche at < 10 years old. Woman with menarche at <10 years old is 2.5 times more likely to develop a uterine fibroid than woman with menarche at >10 years old.

Menstrual disorder in patient with uterine fibroid is more likely a manifestation of this disease, rather than the risk factor for the development of uterine fibroid.

The result in this study warrant a complete and routine gynecological examination in women with early menarche, especially in Indonesian women.

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