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Epidemiological Risk Factors For Fibroid Uterus -A Case Control Study From Kerala

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ABSTRACT
Background: *Fibroids account for one third of hysterectomies and one fifth of gynaecological clinical visits. Hence it is important to identify the risk factors for its occurrence. A few studies are reported from India and hence the need for this study.*
Methods: *This was a case control study done at SAT Hospital, Government Medical College Thiruvananthapuram, Kerala over a period of one year. 285 women with a histological diagnosis of uterine fibroid were studied. 285 age matched controls were taken. Binary logistic regression was done to find out the strength of association of individual risk factors.*
Results: *Cases and controls were similar in socio-demographic variables except in dietary habits. The significant risk factors were parity of ≤2, age of mother at last child birth before 22 years and family history of fibroid. The exposure to passive smoking was found to be negatively associated with occurrence of uterine fibroid.*
Conclusion: *Women with parity ≤ 2, age at last child birth less than 22 years and family history of fibroid were found significant risk factors for uterine fibroids. The association with other risk factors were not found significant in this study.*
Keywords: *uterine fibroids, risk factors, Kerala.*

INTRODUCTION

Uterine fibroids are the commonest benign tumour of the female genital tract and contributes about 70 to 80% of new growths in the female genital tracts[1]. Epidemiologic studies demonstrate that these hormone-dependent, benign tumours follow a woman's reproductive life cycle, increasing in risk with age up until the fifth decade followed by a precipitous decline at menopause[2]. Fibroids account for 33 percent of all hysterectomies and hospital expenditures of $1.2 billion in the United States[3]. It also accounts for specific symptoms including heavy menstrual bleeding, pelvic pressure, infertility and pregnancy loss.[4,5]. Because the economic burden due to fibroids has been increasing, these benign tumours are a significant health concern in women.

Despite their prevalence, little attention had been directed toward the aetiology and pathogenesis of fibroids until recent years because of the rarity of their malignant transformation. Identification of uterine fibroid risk factors through epidemiologic research faces major challenges as these tumours develop in a higher proportion of women by the

fifth decade of life without coming to clinical attention[6]. Age adjusted uterine leiomyoma rates among black women are 2 to 3 times greater than the corresponding rates among whites, but the rate among Hispanic or Asian woman appear to be similar to those among the whites[7]. There are many factors that affect the occurrence of fibroids. Women who have a live born child are at 20 to 50% reduced risk, and the reduction in risk increases with the increase in number of live children[8]. The association of fibroid with BMI is found to be inconsistent and some studies showing negative association with passive smoking [9,10] There is 2 fold increased risk among women who reported high consumption of red meat and ham. The risk appeared to be reduced by 50% among women who reported high intake of green leafy vegetables and fruits[9]. The risk of fibroid was found to be higher among women with a family history of fibroid.

Many epidemiological studies have been conducted on fibroids, but majority being in Europe and North America. Indian population being different in genetic, environmental, sociocultural factors, there is a need for studies from India. Hence a case control study was undertaken from a tertiary centre in Kerala, a southern state in India. The aim of the study was to identify the risk factors for the uterine fibroids diagnosed histopathologically.

MATERIALS AND METHODS

This case control study to identify the risk factors for uterine fibroid was undertaken in Sree Avitom Thirunal Hospital, Government Medical College, Thiruvananthapuram, Kerala over a period of one year after getting approval from institutional review board. All women with histopathologically diagnosed uterine fibroids were taken as cases, and age matched healthy caretakers of antenatal patients from the same hospital with no sonographic evidence of uterine fibroids were taken as controls. Those who had not given informed consent were excluded from the study. Study variables were demographic data, marital status, parity, diet, passive smoking, history of tubal sterilisation, age at first child birth, age at last child birth and family history. Details regarding presenting complaints, clinical examination findings and associated comorbidities were also studied. The data collected were entered in MS Excel and analysed using SPSS. Risk of each parameter was assessed using binary logistic regression and Odds ratio were found out. Two tailed probability value < 0.05 was considered significant.

RESULTS

Results drawn from prospectively studying 285 cases in whom uterine fibroids were diagnosed histopathologically and 285 controls, age matched healthy caretakers of antenatal patients are given below. The prevalence of uterine fibroids were more in the age group 40 to 50 years (65%). Majority of the cases (93%) and controls (94%) were from low socioeconomic status as assessed by Modified Kuppuswamy's scale. 87% of cases and 66% of controls were non vegetarians. The non-vegetarians consumed mainly red meat and less of fish and green leafy vegetables. Being a non-vegetarian was found to be 4.5 times more risk in the occurrence of fibroid. The distribution of other demographic characteristics like religion, education and income were not statistically different in cases when compared to controls. The distribution of demographic characteristics of cases and controls are given as table.1

Table 1: Demographic and socio economic characteristics of cases and controls

Characteristics	Cases n=285	Controls n=285	p value
Religion			0.80
Hindu	213	208	
Christian	43	46	
Muslim	29	31	
Income			0.30
BPL	264	270	
APL	21	15	
Educational status			0.35
Standard X and below	250	240	
Above standard X	35	45	
Diet habits			0.001
Vegetarian	37	97	
Non vegetarian	248	188	

Comparison of risk factors in cases and controls showed significant association with parity, age of mother at last child birth, passive smoking, and family history of fibroid. 198 cases and 151controls were having 2 or less children. Parity of 2 or less were found to be having risk of 2 times for developing fibroid (p=0.001). Age of mother at first child birth was not found to be significantly associated with occurrence of fibroid; whereas women in whom last child birth was before 22 years of age were found to be having 4 times risk of occurrence of fibroid (p 0.0001). Positive family history was seen in 16 (5.6%) cases and was found to be a significant risk factor in the occurrence of fibroid. (OR3.0; p 0.002). Women who were not exposed to passive smoking were found to be at a higher risk of getting fibroids (OR 13.5,p-0.002). The risk factors which were not found significant in this study were age at menarche, age at first child birth, tubal sterilisation and body mass index. The strength of association of the risk factors are presented in table 2.

Table 2: Factors associated with uterine fibroids and their significance

Risk factors		χ^2 value	P value	OR
Age at menarche	13 or less	1.176	0.278	
	Above 13			
Parity	2 or less	19.58	0.001	2.0
	3 or more			
Age of mother at 1st child birth	18 or less	1.376	0.24	
	More than 18			
Age of mother at last child birth	≤22 years	25.286	0.0001	4.0
	More than 22 years			
Tubal sterilisation	Done	0.938	0.80	
	Not done			
Passive smoking	No	140.25	0.0001	13.5
	yes			
Family history of fibroid	Yes	9.180	0.002	3.0
	No			
BMI	Less than 25	0.735	0.64	
	25 and more			

Clinical presentations and examination findings of cases were also analysed. Majority of the cases presented with menstrual symptoms (85%) or mass abdomen (52.6%). 13.6 % of patients presented with urinary symptoms. Urinary symptoms were retention (6.6%), dysuria (6%), and stress incontinence (1%). 2.1 % of patients were detected fibroid when they were evaluated for infertility. One patient presented with incomplete evacuation of bowel. Comorbidities were present in 23% of patients. The comorbidities were hypertension (5.9%), diabetes (3.4%), hypertension & diabetes together (2.6%), heart disease (5.9%), hypothyroidism (3.8%), and other causes (1.4%). The size of uterus at the time of presentation were between 16 weeks to 36 weeks.52 % of patients presented with a uterine size of 16 weeks, 21% presented with 20 weeks size and 20% presented with 24 weeks size.Associated pathologies were present in 10 % of patients. They were unilateral follicular cyst (6.4%), bilateral follicular cysts (1%), unilateral dermoid cyst (0.5%), unilateral chocolate cysts (0.5%), and bilateral chocolate cysts (1.4%).

DISCUSSION

A total of 285 histopathologically proved cases of uterine fibroids were compared with 285 controls to find out the strength of association of possible risk factors. There was a significant positive association between parity of less than 2, age of mother at last child birth before 22 years and family history of fibroid with the occurrence of uterine fibroids. The exposure to passive smoking was found to be negatively associated with occurrence of uterine fibroid. Other known risk factors like age at menarche, age of mother at first child birth, tubal sterilisation and BMI were not found to have any significant association in this study.

We have found an increased risk of 2 times in women with para 2 or less in the occurrence of fibroid when compared to women with 3 or more children. Similar association is well described in other studies [8,11]. An explanation for this finding is that pregnancy reduces the time of exposure to unopposed oestrogens, whereas nulliparity or reduced fertility may be associated with anovulatory cycle characterized by long term

unopposed oestrogens. Another observation was that, age of mother at last child birth less than 22 years was having an increased risk of 4 times when compared to women with last birth after 22 years. This observation is similar to other studies[12]. There were a higher risk of 13.5 times for women not exposed to passive smoking to develop fibroid. This observation is also similar to other studies in literature [8,13]. Positive family history of fibroid had a 3 times more risk for the occurrence of fibroid, though only 5.6% of cases had a positive family history. This observation is similar to other studies[14,15].Increased BMI and tubal sterilisation were found to be risk factors in some studies. Our study do not show any association for these risk factors [8,16].

CONCLUSION

This case control study was able to identify some important risk factors for uterine fibroids. The risk factors were, parity of less than 2, age of mother at last child birth before 22 years and family history of fibroid. The exposure to passive smoking was found to be negatively associated with occurrence of uterine fibroid. Other known risk factors like age at menarche, age of mother at first child birth, tubal sterilisation and BMI were not found to be significant risk factors in this study.

REFERECES

1. Vollenhoven B. Introduction: the epidemiology of uterine leiomyomas. Baillieres Clin Obstet Gynaecol. 1998; 12:169–176.
2. Schwartz SM, Marshall LM, Baird DD. Epidemiologic contributions to understanding the etiology of uterine leiomyomata. Environ Health Perspect. 2000; 108:821–827.
3. Carlson KJ, Nichols DH, Schiff I. Current concepts: indications for hysterectomy. N Engl J Med. 1993; 328:856–860.
4. Stewart EA. Uterine fibroids. Lancet. 2001;357:293-8.
5. Rice JP, Kay HH, Mahony BS. The clinical significance of uterine leiomyomas in pregnancy. Am J Obstet Gynecol. 1989;160:1212-6.
6. Baird DD, Shectman JM, Dixon D et al. African Americans at higher risk than whites for uterine fibroids: ultrasound evidence. Am J Epidemiol.1998; 147(11):S90
7. Marshall et al. Variation in the incidence of uterine leiomyoma among premenopausal women by age and race. ACOG.1997;90:967-973
8. Parazzini F, Negri E, Vechia C et al. Reproductive factors and risk of uterine fibroids. Epidemiology. 1996;7(4);440-442.
9. Yuan He MD, Qiang Zeng MD et al.Associations between uterine fibroids and lifestyles including diet, physical activity and stress: Asia Pac J ClinNutr 2013;22 (1):109-117 a case-control study in China., Shengyong Dong MD2, Liqiang Qin MD3, Guowei Li MM1, Peiyu Wang MD4
10. Marshal LM, Spiegelman D et al. risk of uterine leiomyomata among premenopausal women in relation to body size and cigarette smoking. Epidemiology. 1998;9;511-517
11. Cramer SF, Horiszny JA, Leppert P. Epidemiology of uterine leiomyomas with an etiologic hypothesis. J Reprod Med. 1995;40:595–600.
12. Marshal LM, Spiegelman D Goldman MB et al. A prospective study of reproductive factors and oral contraceptive usein relation to the risk of uterine leiomyoma. Fert Steril.1998;70(3); 432-439
13. Faerstein E, Szklo M et al. risk factors for uterine leiomyoma: A practice based case control study.I. African-American heritage, reproductive history, body size and smoking. Am J Epidemiolo. 2001; 153:1-10
14. VikalyaevaEMKhodzhaeva et al.Familial predisposition to uterine leiomyomas; Int J Gynaecol Obstet. 1995;51:127

15. Lumbiganon P, Rugpao S et al. Protective effect ofDMPA on surgically treated uterine leiomyomas: a multicentric case control study. Br J ObstetGynaecol. 1995; 03(9): 909-14

16. Chiaffarino et al. Diet and uterine myomas; ACOG 1999;94 (3) 395-98.