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Ultrasonographic assessment of uterine fibroids at Ikeja medical centre in Lagos State, Nigeria

Ese Anibor

Department of Human Anatomy and Cell Biology, Delta State University, Abraka, Nigeria

Joyce Ekeme Ikubor

Department of Radiology, Delta State University Teaching Hospital, Oghara, Nigeria

Martins Obaroefe*

Department of Human Anatomy and Cell Biology, Delta State University, Abraka, Nigeria

*Corresponding Author

Sylvia Ifeyinwa Adah

Department of Human Anatomy and Cell Biology, Delta State University, Abraka, Nigeria

Abstract---Background: Uterine fibroids or uterine leiomyoma is a common pathology which poses a major public health concern to women being the most frequent benign gynecologic tumor in premenopausal women. Pelvic ultrasonography is the predominant diagnostic tool and first line imaging tool because of its sensitivity and specificity aside from its other advantages. This study aimed at evaluating the sonographic patterns of uterine leiomyoma of women seen at Ikeja Medical Centre, Lagos and to ascertain the relationship between age and the occurrence of uterine leiomyoma. Methodology: This study employed a descriptive cross sectional study design and retrospectively reviewed the medical records of patients referred for pelvic ultrasound scans. Using purposive sampling technique, data of patients with ultrasonographic diagnosis of uterine fibroids were retrieved and studied. Results: Findings from this study showed patients within 31-40 years (103, 47.9%) being the most prevalent with cases of uterine fibroid while the least observed were those within 51-60 years (7, 3.3%). Investigations also depicted anterior part of the uterus (48.4%) been the most prevalent location for uterine fibroid with intramural fibroid (80.9%) been the most prevalent type and majority of the uterine fibroid observed been less than 2000mm²(56.7%). Findings also depicted significant association exist

between age and uterine fibroid location ($p=0.002$) while on observation of relationship between age and uterine fibroid type, uterine fibroid size insignificant association was reported with p -values of 0.443 and 0.111 respectively. Conclusion: In conclusion, patients within the ages of 31-40 years of age (47.9%) have a high predisposition to uterine fibroid compared to other age groups. The anterior part of the uterus, intramural fibroid type and lesions less than 2000mm² as regards uterine fibroid location, type and size were observed most predominant. Uterine fibroid location was notably associated to age of the patients

Keywords---uterine fibroid, leiomyoma, ultrasound.

Introduction

Uterine leiomyomas or uterine fibroids are the most prevalent gynecological tumors which affect 20-50% of women worldwide; particularly more frequent in black women of reproductive age. (1) Although the cause of fibroids is uncertain, the female hormones estrogen and progesterone are thought to promote the growth of fibroids (2). Being hormone-responsive tumors, they are uncommon in adolescence, develop faster during pregnancy and involute at menopause. (3) Though leiomyomas are the most common benign tumors, there is a 0.1-0.8 percent chance of becoming malignant by transforming into sarcomas. (1) Histologically, leiomyomas arise from the overgrowth of smooth muscle and connective tissue during monoclonal cell proliferation. (4)

Ultrasonography has been used to diagnose leiomyomas since the 1970s and has been the gold standard when transvaginal scans were introduced in the 1980s. Pelvic ultrasound scan which can be done transvaginally (TVS) or transabdominally (TAS) have their advantages and limitations, however in the sonographic management of pelvic pathology, transvaginal sonography is preferred to transabdominal sonography.(5) TVS is more sensitive in the detection of small size leiomyomas and is more effective in evaluating retroverted or retroflexed uteruses(6) while TAS is superior in diagnosing fundally sited myomas. The limited depth in TVS is its most significant drawback as large or pedunculated myomas may be missed with high-frequency probes with short focal lengths. (7)

The high sensitivity and specificity of ultrasonography has made it the first-line imaging tool in the evaluation of pelvic masses suspected to be fibroids, (8) and is now the imaging technique of choice for detecting and evaluating uterine leiomyomas. (9) On ultrasound, fibroids show in a variety of echo patterns, including hypoechoic, isoechoic, hyperechoic, and mixed echo patterns while uncomplicated fibroids are often hypoechoic (10). Leiomyomas are also often seen on ultrasound as well-defined, solid, concentric, hypoechoic masses with varying degrees of acoustic shadowing.

Fibroids based on their location have been classified by the Federation Internationale of Gynaecologists and Obstetricians (FIGO) as intracavitary

fibroid, submucosal fibroid (least frequent), intramural fibroid (most frequent), subserosal fibroid, and pedunculated fibroid.(11) Fibroids located in the cervix (cervical fibroids) can interfere with vaginal delivery with resultant bleeding or ulceration.(12) Submucosal leiomyomas which extend into the endometrial cavity can lead to severe bleeding and are often the cause of menstrual disorders such as polymenorrhoea, menorrhagia, blood clots and inter-menstrual bleeding.(13) Anemia, migraines, general debilitation, dyspnoea, and even circulatory failure can be symptoms of such abnormal bleeding.(13) Fibroids are the most common reason for hysterectomy (both abdominal and vaginal) and a leading cause of gynecologic hospitalizations, accounting for roughly one-third of all procedures performed annually in the United States. (14)

Furthermore, submucosal and intramural leiomyomas can impact fertility by impeding sperm movement and preventing implantation. Subserosal and pedunculated leiomyomas can induce symptoms as a result of pressure effect on surrounding tissues; and can also produce acute pelvic pain due to degeneration, necrosis or peduncle torsion of previously asymptomatic leiomyomas. (15) Extra-uterine location of fibroids can be in the pelvic ligaments, the fallopian tubes, the cervix or the vagina. Internal bleeding, fibrosis, calcification, atrophy, and many forms of degeneration can occur in leiomyomas. (16) It is thought that black women have a higher fibroid burden than white women. (14) The aim of this study is to evaluate the sonographic patterns of uterine leiomyoma; as well as to determine its occurrence and relationship with the age of a group of women of black population.

Materials and Methods

This study was a descriptive cross-sectional review of the records of patients who were referred to the Radiology department of the Ikeja Medical Centre, Ikeja, Lagos State, Nigeria for pelvic ultrasound scan over a period of two years. Ethical approval for the study protocol was obtained from the Research and Ethics Committee, Human Anatomy Department of the Delta State University, Abraka, Nigeria. Permission to access the records of the patients from the medical records unit of the Radiology Department and Gynecology Clinic was granted by the hospital management. Data extracted from the records of the women with ultrasonographic diagnosis of uterine fibroids which included the age and characteristics of the fibroids (size, location, and type) were entered into the data spreadsheet and analyzed with Statistical Package for Social Sciences (SPSS) version 23. The results were presented in tables and charts and Chi-square test was also used for inferential statistics.

Results

Two hundred and fifteen women of different ages were referred for pelvic scan during the review period on the account of varying complaints due to different gynaecological disorders.

Table 1: Age distribution of the studied population.

Age group (years)	Frequency (%)
21-30	47 (21.9)
31-40	103 (47.9)
41-50	58 (27.0)
51-60	7 (3.3)
Total	215 (100.0)

Table 1 shows the age distribution of the studied population with the 31-40years age group 31-40 years having the highest frequency 103 (47.9%) which is followed by those aged 41-50 years who were 58 (27.0%) in number. The 51-60 years age group had the least frequency of 7(3.3%).

Table 2: Distribution of location of uterine fibroid in the studied population

Uterine fibroid location	Frequency (%)
Anterior	104 (48.4)
Fundal	53 (24.7)
Posterior	58 (27.0)
Total	215 (100.0)

Table 3: Distribution of the types of uterine fibroid in the studied population

Uterine fibroid type	Frequency (%)
Subserous	14 (6.5)
Intramural	174 (80.9)
Pendiculated	3 (1.4)
Submucous	24 (11.2)
Total	215 (100.0)

Tables 2 and 3 depict the location and types of uterine fibroids in the studied population. The most prevalent uterine fibroid location is the anterior site seen in 104 (48.4%) women, which is followed by posterior (58, 27.0%) while the least was fundal location (53, 24.7%) (Table 2). The predominant uterine fibroid type was intramural with a frequency of 174 (80.9%), followed by the submucous type (24, 11.2%). The least prevalent fibroid type were the pedunculated fibroids which had the least frequency of 3 (1.4%) (Table 3).

Table 4: Size distribution of the uterine fibroids in the studied population.

Uterine fibroid size	Frequency (%)
< 20cm ²	122 (56.7)
> 20cm ²	93 (43.3)
Total	215 (100.0)

Table 4 shows that the majority 122 (56.7%) of the uterine fibroids were less than 20cm² in size while 93 (43.3%) patients had uterine fibroids that were greater than 20cm² in size.

Table 5: Chi-square test of association between age and uterine fibroid location

Age group (years)	Anterior	Fundal	Posterior	Chi-square	Df	p-value
21-30	29 (13.5)	8 (3.7)	10 (4.7)	20.795	6	0.002
31-40	50 (23.3)	20 (9.3)	33 (15.3)			
41-50	19 (8.8)	25 (11.6)	14 (6.5)			
51-60	6 (2.8)	-	1 (0.5)			
Total	104 (48.4)	53 (24.7)	58 (27.0)			

Table 6: Chi-square test of association between age and uterine fibroid type

Age group (years)	Subserous	Intramural	Pedunculated	Submucous	Chi-square	Df	P-value
21-30	6 (2.8)	36 (16.7)	1 (0.5)	4 (1.9)	8.934	9	0.443
31-40	6 (2.8)	81 (37.7)	2 (0.9)	14 (6.5)			
41-50	1 (0.5)	52 (24.2)	-	5 (2.3)			
51-60	1 (0.5)	5 (2.3)	-	1 (0.5)			
Total	14 (6.5)	174 (80.9)	3 (1.4)	24 (11.2)			

Table 7: Chi-square test of association between age and uterine fibroid size.

Age group (years)	< 20cm ²	>20cm ²	Chi-square	Df	p-value
21-30	33 (15.3)	14 (6.5)	6.020	3	0.111
31-40	56 (26.0)	47 (21.9)			
41-50	28 (13.0)	30 (14.0)			
51-60	5 (2.3)	2 (0.9)			
Total	122 (56.7)	93 (43.3)			

Results

Two hundred and fifteen women of different ages were referred for pelvic scan during the review period on the account of varying complaints due to different gynaecological disorders. Table 5 to 7 displays the associations between age with uterine fibroid size and type as derived using Chi-square. There was a significant ($p = 0.002$) association between age and uterine fibroid location (Table 5). However, there was no significant association between age and uterine fibroid type ($p = 0.443$) and also between age and uterine fibroid size ($p = 0.111$) as depicted in Tables 6 and 7 respectively.

Discussion

Women in the 30-40 years age group of this study were the most predisposed to uterine fibroids (47.7%) whereas the least affected were those aged 60 years (3.2%); a similar finding has been reported by Rashid et al.⁸ At variance to the

finding of this study is the higher prevalence (33%) of uterine fibroid found in the 40 - 60 years age group compared to the 11 to 18 % found in the 30-40 age group as reported by Lurie et al.² The anterior myometrium was the commonest (48.8%) site of the uterine fibroids seen in this study and is similar to the frequency of 45% reported in the research conducted by Ofori et al,¹⁶ but these findings are in contrast with those observed in a study carried out by Rashid et al., which illustrated that the posterior part of the uterus was the prevalent site of uterine fibroids in their studies. (8,15).

More than two-thirds of the uterine fibroids were intramural type of fibroids. Predominance of the intramural fibroids was also seen in the works of Rashid et al. and Laurie et al with a frequency of 64% and 57% respectively; but these findings were in contrast with those observed in a study conducted by Hall and Yoder, which reported submucous uterine fibroid been the least prevalent with a frequency of 4.4%. Similarly in a study conducted had by majority of the uterine fibroid cases were less than 2000mm² in size with a frequency of 75% of observed uterine fibroids (5,14,16).

Investigation of results from showed similar findings of age depicting significant association with location of uterine fibroid with a p-value of 0.004 (16, 17). Outcome of this academic effort has correspondence with the reports of Babarinsa et al., which showed a notable association between age and finding of uterine lesions with p value at 0.015 (18). Findings noted by Yakasai et al., offered a non-significant relationship between age and uterine lesions with a possibility rate of 0.053 (19). The discourse above disclosed remarkable irregularity in the incidences of uterine fibroids in different parts of the world. Mellowness, methodology, race, culture and environment are plausible reasons for these variations.

Conflict of Interest

Authors declare no conflict of interest

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