Benghazi University Medical journal
Faculty of Medicine, University of Benghazi
BUMJ VOLMUE:2 ISSUE:1 June: 2025

Assessing Clinicopathologic factors in uterine leiomyoma patients in East Libya.

Guheina A.R. Ashour[1]*, Raja S Elkwafi[1], Aya Abd-alsalam Faitori Ali [2], Shahad Fadl-allah Al-Barghathi [2] , Amani Abokhazim Al-sahati [2].

Original Research Article

Abstract

Introduction: Uterine leiomyomas (ULs) are benign tumors of smooth muscle tissue; occur in women of reproductive age, with clinical manifestations depending on their size, and location.

Aim: To assess the clinicopathologic factors related to uterine leiomyomas.

Materials and methods: The data were collected from the Electronic Archive Unit, Benghazi Medical Center using structured forms. Descriptive, retrospective study was accomplished, using data over the period of Jan 2020-Dec 2021. Statistical analysis was done using IBM SPSS, version 20.

Results: Seventy-three cases were included in the study with mean age of 43.31 ±7.31 years, (54.9%) of cases were in the age group 41-50 years, with statistically significant difference in the cases above forties. Blood group O+ represented in (32.9%) of total cases, followed by blood group A+. Uterine leiomyomas were higher among the married women (42.5%). Among the clinical features, menorrhagia was the common complaint in (50.7%) of cases. With statistically significant difference, Menorrhagia, Irregular bleeding, and Pain (pelvic / abdominal) were occurred more in the age group 41-50 years, while Dysmenorrhea and Infertility were in younger age between 31-40 years. Myomectomy was performed in (74%) of cases. Multiple uterine leiomyomas were in (54.8%) of cases. The mean tumor size was 6.75±4.25 cm. Associated changes are seen, the Endometrial hyperplasia was in one case, adenomyosis was found in 4 cases, chocolate cyst in 5 cases and simple cyst in one case.

Conclusion: Uterine leiomyomas occur in childbearing age and premenopausal women, more in whom with blood group O+. The multiple leiomyomas were commoner than single. Married patients were more affected than the single. Menorrhagia was a frequent presenting complaint.

Key words: Uterine leiomyomas, Multiple leiomyomas, Menorrhagia, Dysmenorrhea, Infertility.

1. *Pathology Department, Faculty of Medicine, University of Benghazi, Benghazi, Libya.*
2. *Cytotechnology Department, Faculty of Biomedical Science, University of Benghazi, Benghazi, Libya.*
**Corresponding author: Guheina A.R. Ashour, Email: guheina.ashour@uob.edu.ly.*

Copyright©2024University of Benghazi.This open Access article is Distributed under a CC BY-NC-ND 4.0 license. *ISSN: Online 3005-7450, ISSN:Link 3005-7442*
https://www.journals.uob.edu.ly/BUMEJ DOI: https://doi.org/10.37376/benuivmedj.v1i2

Introduction:

ULs are the most common benign tumors in women of reproductive age, originate from the uterine smooth muscle tissue, and their growth depends on estrogen and progesterone (1). The ULs vary in size, shape, and location (2). Increasing age and African descent are the major risk factors for fibroid (3,4). The incidence of the ULs is underestimated since many ULs have mild or no symptoms, so remain undiagnosed. The estimated prevalence ranges from 4.5% to 68.6% depending on population under study and method of diagnosis (4,5).

The clinical manifestations of ULs depend on their size, location and hormonal effects (4,6). Dysmenorrhea, menorrhagia, pelvic pain, infertility, abortion, preterm labour and complications among the pregnancy affect the patient performance, social and daily life activity. The symptoms are severe in about 25% of women, and the treatment is required (5). Since the UL is a morbid tumor, hysterectomy is indicated in the cases with significant morbidity (7). Myomectomy is done depending on the size and location of ULs and the symptoms-fertility goal, as reported that myomectomy can increase the pregnancy rate for patients with infertility (8).

This study is aimed to assess the clinicopathologic factors related to uterine leiomyomas. The objectives were to find the mean age, the frequency of ULs in different age groups, comparing the age groups above and below 40 years, the relation of ULs to blood groups, patient's marital status, and complaints, type of operation, number and size of ULs. Location of ULs and associated changes in the endometrium and ovaries.

Copyright©2024University of Benghazi.This open Access article is Distributed under a CC BY-NC-ND 4.0 license. ISSN: Online 3005-7450, ISSN:Link 3005-7442

https://www.journals.uob.edu.ly/BUMEJ DOI: https://doi.org/10.37376/benuivmedj.v1i2

Materials and Methods:

Study design

A retrospective cross-sectional study of 73 cases with ULs. The study took place in Benghazi Medical Centre (BMC) in Benghazi, from January 2020 to December 2021. A consent was obtained from BMC management. The data were collected from the Electronic Archive Unit, Benghazi Medical Center using structured forms and represented in the patient's age, blood group, marital status, complaints, type of operation, number and size of ULs. Location of ULs and associated changes in the endometrium and ovaries are also collected (when available).

Data analysis

The collected data are statistically analysed using IBM SPSS Statistics for windows, version 20 (IBM Corp., Armonk, N.Y., USA). The continuous variables like patient`s age were presented as mean±standard deviation and also categorized into groups, while the tumor size was presented as mean±standard deviation.

Comparing means of the two age groups were done using t-test, the difference was considered statistically significant when (P-value <0.05)

Categorical variables were presented as number and percentage.

Chi-square test was carried out to assess significant differences among groups, Chi square regarded as significant when (P-value <0.05).

Results:

ULs are commonly seen in women of childbearing age. In the current work, the patient's age was available for 71 cases out of 73 cases with a mean of 43.31 ±7.31 years (age range: 30-74 years). The patient's age was categorized into different age groups; the majority of the patients were in the age group 41-50

Copyright©2024University of Benghazi.This open Access article is Distributed under a CC BY-NC-ND 4.0 license. ISSN: Online 3005-7450, ISSN:Link 3005-7442

https://www.journals.uob.edu.ly/BUMEJ DOI: https://doi.org/10.37376/benuivmedj.v1i2

years as shown in figure (1).

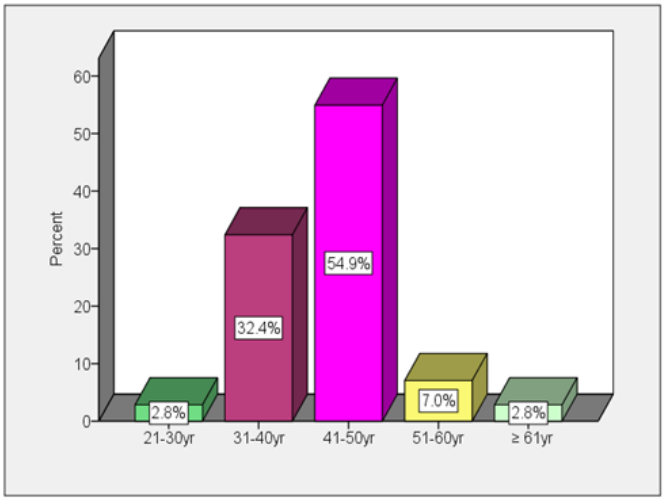


Figure .(1): Age distribution of patients with ULs.

A significant difference in the mean age of women below the forties and above the forties is shown in table (1), with that ULs are more in women above forties.

Table .(1): Comparing mean of the two age groups above and below 40yr using t-test.

Age groups	%N	Mean	Std. Deviation	P- value
Age<40yr	(26.8%)19	35.00	2.94	0.0001
Age≥40yr	(73.2%)52	46.34	5.92	

Copyright©2024University of Benghazi.This open Access article is Distributed under a CC BY-NC-ND 4.0 license. ISSN: Online 3005-7450, ISSN:Link 3005-7442
https://www.journals.uob.edu.ly/BUMEJ DOI: https://doi.org/10.37376/benuivmedj.v1i2

Among different blood groups, in the current study, ULs were highest in blood group O (37%) of cases. Blood group O+ is the commonest, followed by blood group A+ and blood group B+, then other blood groups as shown in figure (2). Eleven cases, their blood groups were not available.

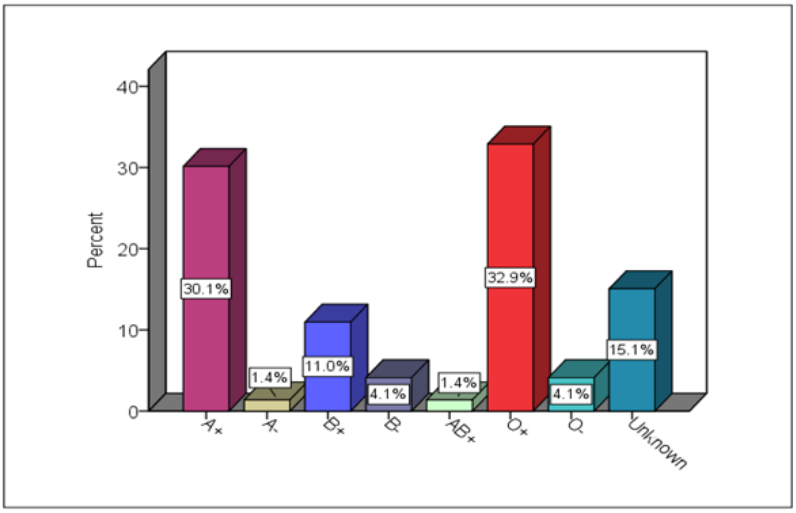


Figure .(2): Percentage of different blood groups in patients with ULs.

The occurrence of ULs among married women was higher in comparison with single ones. The percentage is represented in figure (3).

Copyright©2024University of Benghazi.This open Access article is Distributed under a CC BY-NC-ND 4.0 license. ISSN: Online 3005-7450, ISSN:Link 3005-7442
https://www.journals.uob.edu.ly/BUMEJ DOI: https://doi.org/10.37376/benuivmedj.v1i2

Benghazi University Medical journal
Faculty of Medicine, University of Benghazi
VOLMUE:2 ISSUE:1 June: 2025 BUMJ

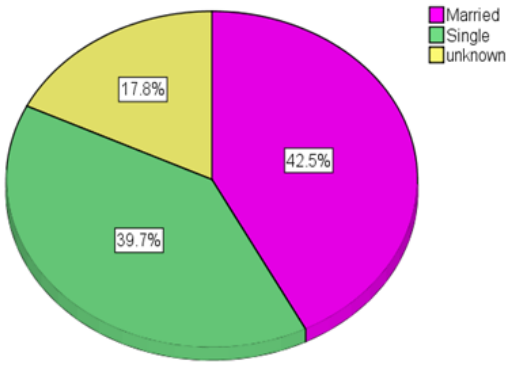


Figure.(3): The distribution of the patients according to thier marital status.

Regarding patient's symptoms, menorrhagia was the common complaint, whereas irregular bleeding and dysmenorrhea occurred with equal percentage. Other complaints represented in table (2). There was a significant correlation between the patient's complaints and different age groups. Menorrhagia, Irregular bleeding, and Pain (pelvic / abdominal) occurred more in age group 41-50 years, while Dysmenorrhea and Infertility were in younger age between 31-40 years as shown in table (2).

Copyright©2024University of Benghazi.This open Access article is Distributed under a CC BY-NC-ND 4.0 license. ISSN: Online 3005-7450, ISSN:Link 3005-7442
https://www.journals.uob.edu.ly/BUMEJ DOI: https://doi.org/10.37376/benuivmedj.v1i2

BUMJ
Benghazi University Medical journal
Faculty of Medicine, University of Benghazi
VOLMUE:2 ISSUE:1 June: 2025

Table. (2): The distribution of patients by their complaints and age groups.

Patient`s complaints	Patient's age groups - n (%)					
	21-30	31-40	41-50	51-60	≥61	Total
Menorrhagia	1(2.8%)	10(27.8%)	21(58.3%)	3(8.3%)	1(2.8%)	36(51%)
Irregular bleeding	0(0%)	2(40.0%)	3(60.0%)	0(0%)	0(0%)	5(7%)
Dysmenorrhea	0(0%)	3(60.0%)	2(40.0%)	0(0%)	0(0%)	5(7%)
Pain (pelvic / abdominal)	0(0%)	2(33.3%)	4(66.7%)	0(0%)	0(0%)	6(8%)
Pelvic pain and pelvic mass	0(0%)	0(0%)	0(0%)	0(0%)	1(100%)	1(1%)
Infertility	0(0%)	2(100.0%)	0(0%)	0(0%)	0(0%)	2(3%)
No complaints	0(0%)	1(25.0%)	3(75.0%)	0(0%)	0(0%)	4(6%)
Others	0(0%)	1(33.3%)	1(33.3%)	1(33.3%)	0(0%)	3(4%)
Unknown	1(11.1%)	2(22.2%)	5(55.6%)	1(11.1%)	0(0%)	9(13%)
Total	2(2.8%)	23(32.4%)	39(54.9%)	5(7.0%)	2(2.8%)	71(100%)
P-value	0.023					

Myomectomy was commonly performed type of operation, followed by total abdominal hysterectomy with bilateral salpingo-oopherectomy, then the other types of operation as revealed in table (3).

Table .(3): The distribution of the patients according to the type of operation

Type of operation	Frequency	Percent
Myomectomy	54	74.0
STAH	4	5.5
TAH	3	4.1
TAH+BSO	11	15.1
Unknown	1	1.4
Total	73	100.0

Copyright©2024University of Benghazi.This open Access article is Distributed under a CC BY-NC-ND 4.0 license. ISSN: Online 3005-7450, ISSN:Link 3005-7442
https://www.journals.uob.edu.ly/BUMEJ DOI: https://doi.org/10.37376/benuivmedj.v1i2

STAH, Subtotal abdominal hysterectomy; **TAH**, Total abdominal hysterectomy; **TAH+BSO**, Total abdominal hysterectomy with bilateral salpingoopherectomy.

Multiple ULs were more compared to single ones as shown in figure (4).

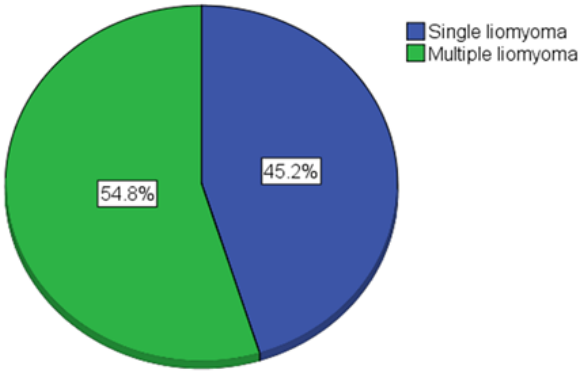


Figure .(4): The percentage of single vs multiple ULs.

The tumor size was available for 71 cases out of 73 cases with a mean of 6.75±4.25 cm (the maximum tumor diameter ranges from 1-20cm) (figure 5).

Copyright©2024University of Benghazi.This open Access article is Distributed under a CC BY-NC-ND 4.0 license. ISSN: Online 3005-7450, ISSN:Link 3005-7442

https://www.journals.uob.edu.ly/BUMEJ DOI: https://doi.org/10.37376/benuivmedj.v1i2



Figure .(5): Variable sized ULs extracted from a uterus diagnosed with multiple leiomyomas

ULs were located in subserosa in eight (11%) cases, submucosal site reported in two (2.7%) cases (figure 6), and four (5.5%) cases were intramural. However, the data about other cases were not revealed in files.

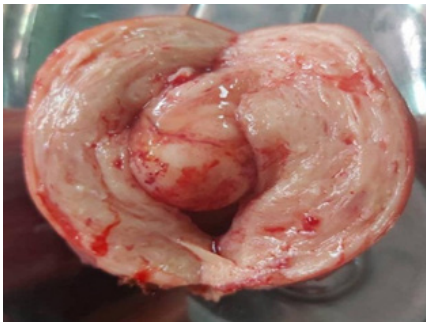


Figure .(6): Gross section of uterus with submucosal leiomyoma.

Copyright©2024University of Benghazi.This open Access article is Distributed under a CC BY-NC-ND 4.0 license. ISSN: Online 3005-7450, ISSN:Link 3005-7442
https://www.journals.uob.edu.ly/BUMEJ DOI: https://doi.org/10.37376/benuivmedj.v1i2

The histopathological picture of ULs showed proliferating bundles of smooth muscle cells with connective tissue displays a variable number of blood vessels and fibroblasts, degenerative change was also seen (figure 7a &b).

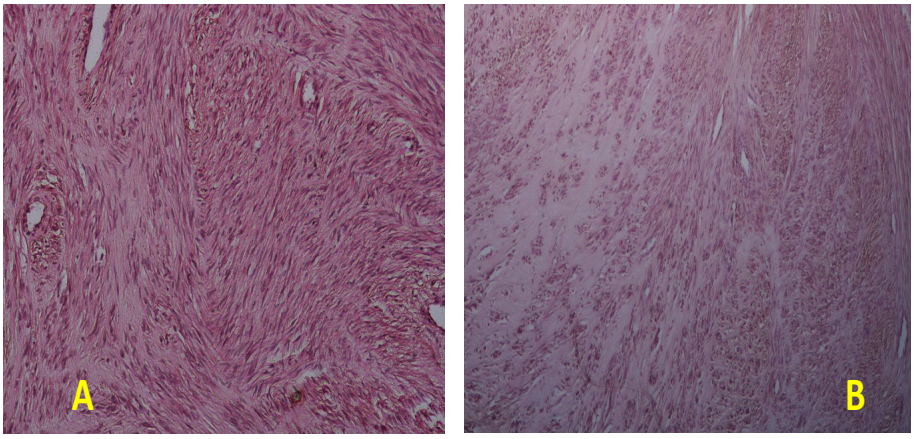


Figure .(7): a. High power view of H&E stained tissue section from UL shows intersecting proliferating bundles of smooth muscle cells with indistinct borders, eosinophilic cytoplasm, and cigar-shaped nuclei; b. Low power view shows homogeneous pale pink area of hyaline degeneration.

Copyright©2024University of Benghazi.This open Access article is Distributed under a CC BY-NC-ND 4.0 license. ISSN: Online 3005-7450, ISSN:Link 3005-7442
https://www.journals.uob.edu.ly/BUMEJ DOI: https://doi.org/10.37376/benuivmedj.v1i2

Endometrial hyperplasia was reported in one case, adenomyosis was found in four (5.5%) cases, whereas the ovarian changes were chocolate cyst in five (6.8%) cases and simple cyst in one case.

Discussion:

UL is a benign tumor of smooth muscle that is commonly seen in women of reproductive age group. In this study, the mean age of the patients was 43.31 ±7.31 years with age ranging from 30–74 years, and most of them were in the age group 41–50 years (54.9%). These findings are similar to a study conducted by Bhatta et al. (9). Likewise, a study performed by Priyadarshini showed that the commonly affected age group was 41–50 years (51%), and a study done by Tiwari A. and Sapkota P. revealed the mean age was 44.95±7.36 years with (94%) of patients were between the age of 30–60 years (10,11). Whereas a study performed by Gowri et al. exposed that patient`s age range 26–59 years, with most ULs affected patients aged 31–50 years, representing (90%) of cases (6).

In the present work, there was a statistically significant difference on comparing the mean age of the patients below and above forties. In contrast to this finding a study performed by Ashour et al. which revealed no significant difference between advanced ages compared with the young ages; the below and above forties (12). The method of diagnosis and nature of population understudy and different risk factors may explain different finding (4)

In this work, among cases of known blood groups, ULs were slightly higher in women possessing blood group O+ (32.9%), followed by blood group A+ (30.1%), then blood group B+ (11%). Compared to this, a study done by Ashour et al. revealed that women holding blood

Copyright©2024University of Benghazi.This open Access article is Distributed under a CC BY-NC-ND 4.0 license. ISSN: Online 3005-7450, ISSN:Link 3005-7442
https://www.journals.uob.edu.ly/BUMEJ DOI: https://doi.org/10.37376/benuivmedj.v1i2

group O+ (45%) were higher with significant difference from the other blood groups; A+ and B+ representing 28% and 20% respectively (12).

The occurrence of ULs among the married women was higher (42.5%) in this study compared with single ones; in available data, as there are 17.8% of the total cases the marital status was not available. Likewise, data from a study accomplished by Ashour et al. exposed the occurrence of ULs was higher (59.30 %) in married women compared with single and divorced women (12). This may be related to increased gynaecological care during the marital years, and delayed childbirth with family planning that expose women to estrogen for long period (4).

ULs are usually asymptomatic, but can manifest depending on their size, location and hormonal effects. In this study, menorrhagia was the common complaint (51%), followed by irregular bleeding and dysmenorrhea, which occurred with equal percentage. A significant difference in the symptoms within age groups with menorrhagia, Irregular bleeding, and Pain (pelvic / abdominal) occurred more in age group 41–50 years, while dysmenorrhea and Infertility were in younger age between 31–40 years. This came in agreement with studies performed by Gowri et al. and Priyadarshini exposed that menorrhagia was the commonest clinical manifestation followed by pain in abdomen and dysmenorrhea with most affected patients aged 31–50 years (6,10). In the same way, a study performed by Lahori showed that the majority of the patients were between 41–50 years, and the presentation commonly the menorrhagia followed by pain in abdomen and dysmenorrhea (13). A study performed by Ashour et al. exposed that most of the cases were recorded with menorrhagia, which was significantly higher from

Copyright©2024University of Benghazi.This open Access article is Distributed under a CC BY-NC-ND 4.0 license. ISSN: Online 3005-7450, ISSN:Link 3005-7442
https://www.journals.uob.edu.ly/BUMEJ DOI: https://doi.org/10.37376/benuivmedj.v1i2

other presentations (12).

In the present work, myomectomy was the commonly performed type of operation (74%) followed by total abdominal hysterectomy with Bilateral Salphingo-oophorectomy. Likewise, data from a study done by Ashour et al. myomectomy was the preferable for patient management (80.9%) than trans- abdominal hysterectomy and other ways of management (12). Comparably, a study done by Da Silva et al. revealed that total hysterectomy was the most frequently performed surgery (94.7%) followed by partial hysterectomy, then myomectomy (14). In addition, a study conducted by Tiwari A. and Sapkota P. revealed that total abdominal hysterectomy with Bilateral Salphingo-oophorectomy was done in (90%) of cases and myomectomy in (10%) of cases (11). Moreover, a study done by Kulkarni et al. exposed that (50%) of patients underwent total abdominal hysterectomy. The least performed operations were myomectomy and vaginal hysterectomy (15).

Multiple ULs (54.8%) were occurred more than single ones in this study, with tumor size ranges from 1-20 cm with mean of 6.75±4.25 cm. The tumor location was available for some cases. The subserosal site was in (11%) of cases and submucosal site reported in (2.7%) of cases. Similarly, a study performed by Tiwari A. and Sapkota P. revealed that multiple leiomyomas were present in (54%) of cases, with tumor size ranges ranging from 0.3 - 22cm (11). In contrast to this finding, a study accomplished by Bhatta et al. and Gowri et al. exposed that most of ULs were single in (80.95%) and (71%) respectively (159,6). The subserosal location was in (13.1%) of cases and submucosal site was in (16.6%) of cases according to data by Bhatta et al. (9). Figures from study by Gowri et al. revealed (48%) of

Copyright©2024University of Benghazi.This open Access article is Distributed under a CC BY-NC-ND 4.0 license. ISSN: Online 3005-7450, ISSN:Link 3005-7442
https://www.journals.uob.edu.ly/BUMEJ DOI: https://doi.org/10.37376/benuivmedj.v1i2

cases had intramural fibroid whereas subserosal (16%) submucosal (3%) and (33%) had leiomyomas in more than one location (6). Also, a study done by Priyadarshini and Lahori showed (59%) and (56.95%) of ULs were single, and intramural location was seen in (66.65%) and (57.4%) followed by subserosal location (20.3%) and (30.69%) respectively (10,13). Moreover, the study conducted by Lahori showed the tumor size ranged from a few mm to 13cm (13).

In the current work, the associated changes in patients with ULs; endometrial hyperplasia was detected in one case, and adenomyosis was found in (5.5%) of cases. The ovarian changes were existing as chocolate cyst in (6.8%) of cases and simple cyst in one case. Comparably, a study performed by Gowri et al. exhibited simple endometrial hyperplasia in (22.8%) and ovarian chocolate cyst in (0.8%) of cases (6). A work accomplished by Priyadarshini disclosed that (11%) of the patients had cystic ovaries and (19 %) had adenomyosis (10).

Conclusion:

ULs are benign tumor affects the women in the reproductive and perimenopausal age group, mostly in the fifth decade, the married ones more than the single. The blood group O+ is predominant. Multiple ULs are more than the solitary. The most common mode of presentation is menorrhagia. The myomectomy is the common procedure in the management of ULs.

Limitation of the study: Shortage of the information in the patient`s files

Recommendations:

-The patient`s record files should be designed to contain all informative data for follow up and to be a source of research.

-Regarding study form, further studies of the pathological nature of the disease and research to be con-

Copyright©2024University of Benghazi.This open Access article is Distributed under a CC BY-NC-ND 4.0 license. ISSN: Online 3005-7450, ISSN:Link 3005-7442

https://www.journals.uob.edu.ly/BUMEJ DOI: https://doi.org/10.37376/benuivmedj.v1i2

ducted in larger samples using molecular and immunohistochemical studies in order to develop a more comprehensive method for combating the disease.

-Conflicting Interest: there is no conflict

References:

1.Florence AM, Fatehi M. Leiomyoma. [Updated 2023 Jul 17]. In: StatPearls [online]. Treasure Island (FL): StatPearls Publishing; 2025 Jan. [Accessed 2025 May 4]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK538273/?utm_source=chatgpt.com

2.Key AP. Uterine fibroids: causes, symptoms, and treatment [online]. WebMD. (2024, Jan). 2024 [Accessed 2025 May 4]. Available from: https://www.webmd.com/women/uterine-fibroids/uterine-fibroids

3.Sefah N, Ndebele S, Prince L, Korasare E, Agbleke M, Nkansah A, et al. Uterine fibroids - Causes, impact, treatment, and lens to the African perspective. Front Pharmacol. 2023;13:1045783.

4.Fathima F, Afreen A, CH. B. Praveena Devi, Maheshwari B. Uterine fibroids: pathogenesis, epidemiology and its clinical manifestations on human endometrium functioning. Int J Biol Pharm Allied Sci. 2025;14(1).

5.Barjon K, Kahn J, Singh M. Uterine Leiomyomata. [Updated 2025 May 4]. In: StatPearls [online]. Treasure Island (FL): StatPearls Publishing; 2025 Jan. Available from:—https://www.ncbi.nlm.nih.gov/books/NBK546680/?utm_source=chatgpt.com

6.Gowri M, Mala G, Murthy S, Nayak V. Clinicopathological study of uterine leiomyomas in hysterectomy specimens. IJournal Evol Med Dent Sci [online]. 2013;2(46):9025–32. [Accessed 2025 May 4]. Available from: https://jemds.com/data_pdf/vedavathy nayak.pdf

7.Yang Q, Ciebiera M, Bariani MV,

Copyright©2024University of Benghazi.This open Access article is Distributed under a CC BY-NC-ND 4.0 license. ISSN: Online 3005-7450, ISSN:Link 3005-7442
https://www.journals.uob.edu.ly/BUMEJ DOI: https://doi.org/10.37376/benuivmedj.v1i2

Ali M, Elkafas H, Boyer TG, et al. Comprehensive review of uterine fibroids: developmental origin, pathogenesis, and treatment. Endocr Rev [online]. 2022;43(4):678–719. [Accessed 2025 May 6]. Available from:https://academic.oup.com/edrv/article/43/4/678/6422392

8.Ciavattini A, Giuseppe J Di, Stortoni P, Montik N, Giannubilo SR, Litta P, et al. Uterine fibroids: pathogenesis and interactions with endometrium and endomyometrial junction. Obstet Gynecol Int [online]. 2013;2013. [Accessed 2025 May 6]. Available from: https://pubmed.ncbi.nlm.nih.gov/24163697/

9.Bhatta S, Bhandari S, Osti BP. Histopathological study of uterine leiomyoma in hysterectomy specimens. Ann Clin Chem Lab Med [online]. 2017;3(2):16–20. [Accessed 2025 May 7]. Available from: https://www.nepjol.info/index.php/ACCLM/article/view/20739

10.Priyadarshini P. Clinicopathological study of uterine leiomyomas in hysterectomy specimens; a retroseptive study. Int J Adv Res. 2018;6(2):571–6.

11.Tiwari A, Sapkota P. Study of histomorphological patterns of uterine leiomyomas: an observational study. JNMA J Nepal Med Assoc.2025;63(282):88–92.

12.Ashour FM Ben, Eljadi AM, Gregni NB, Alkali AA, Husien WMR. Studying the effect of some factors on the high incidence of uterine fibroid in Libyan women. Int J Reprod Contraception, Obstet Gynecol [online]. 2017;4(6):1954–60. [Accessed 2025 May 6]. Available from: https://www.ijrcog.org/index.php/ijrcog/article/view/2371

13.Lahori G. Clinicopathological spectrum of uterine leiomyomas in a state of Northern India: a hospital based study. Int J Reprod Contracept Obs Gynecol [online]. 2016;5(7):2295–9. [Accessed 2025 May 7]. Available from: http://

Copyright©2024University of Benghazi.This open Access article is Distributed under a CC BY-NC-ND 4.0 license. ISSN: Online 3005-7450, ISSN:Link 3005-7442
https://www.journals.uob.edu.ly/BUMEJ DOI: https://doi.org/10.37376/benuivmedj.v1i2

dx.doi.org/10.18203/2320-1770.ijr-cog20162114

14.Da Silva APF, Mello LDA, Dos Santos ERR, Paz ST, Cavalcanti CLB, Melo-Junior MR De. Histopathological and digital morphometrical evaluation of uterine leiomyoma in Brazilian women. Obstet Gynecol Int [online]. 2016; 2016. [Accessed 2025 May 7]. Available from: http://dx.doi.org/10.1155/2016/2968410

15.Kulkarni MR, Dutta I, Dutta DK. Clinicopathological study of uterine leiomyomas: a multicentric study in rural population. J Obstet Gynecol India. 2016;66(S1):412–6.

Copyright©2024University of Benghazi.This open Access article is Distributed under a CC BY-NC-ND 4.0 license. ISSN: Online 3005-7450, ISSN:Link 3005-7442

https://www.journals.uob.edu.ly/BUMEJ DOI: https://doi.org/10.37376/benuivmedj.v1i2