Histopathological Study of Myometrial Lesions of Uterus in a Tertiary Care Hospital of South India

Gayathri B.N.[1], Mallikarjun A. Pattanashetti[2], Priyadarshini M.M.[3]

[1, 3] Department of Pathology, Kodagu Institute of Medical Sciences, Madikeri, Karnataka, India.
[2]Department of Pathology, Gadag Institute of Medical Sciences, Gadag, Karnataka, India.

ABSTRACT

BACKGROUND

The most commonly done gynaecological surgery worldwide is hysterectomy. Myometrial lesions contribute to majority of cases with abnormal uterine bleeding. Leiomyoma and adenomyosis are most common lesions seen in the myometrium. The present study was undertaken to identify the various types of myometrial pathologies in hysterectomy samples.

METHODS

This is a two-year retrospective cross-sectional study done from January 2017 to December 2018, in the Department of Pathology, Kodagu Institute of Medical Sciences, Madikeri. All the patients who underwent hysterectomy and myomectomy for myometrial lesions of uterus were included in the study. Hysterectomy specimens showing secondaries, gross infection, massive haemorrhage and necrosis were excluded from the study. Gross appearance and microscopic pathology were noted and results were analysed.

RESULTS

In this study, 148 specimens were included. Age range was from 20 years to 65 years. Histopathological examination revealed that 58.25 % of myometrial lesions were present in the age group of 41 to 50 years followed by age group of 31 to 40 years. Histopathological examination done showed the following diagnosis in patients - leiomyoma (85.13 %), adenomyosis (8.79 %) and leiomyoma with adenomyosis (6.08 %).

CONCLUSIONS

The commonest histopathological lesion in myometrium was leiomyoma (85.13 %) followed by adenomyosis (8.79 %). It is mandatory to examine the hysterectomy specimens adequately to diagnose myometrial lesions.

KEYWORDS

Myometrium, Leiomyoma, Adenomyosis

Corresponding Author:
Dr. Mallikarjun A. Pattanashetti,
Plot No. 295, 2nd Stage,
Hanuman Nagar, Belagavi – 590001,
Karnataka, India.
E-mail: drmallikarjun.88@gmail.com

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BACKGROUND

There are various diseases affecting the female reproductive system. Endometrium and myometrium of uterus are continuously stimulated by hormones and are denuded monthly of its endometrial mucosa.[1] Most common complaints presented are vaginal discharge, per vaginal bleeding, pain abdomen, difficulty in micturition, menstrual irregularity, postmenopausal bleeding, prolapse etc.[2]

Myometrial lesions are important from clinical and pathological perspective and they give rise to varieties of histological patterns and grades of malignancy. The most common myometrial lesions include leiomyoma and adenomyosis. Due to non-specific symptoms, the clinical diagnosis of adenomyosis is difficult and leiomyomas are commonly associated with adenomyosis, which makes differential diagnosis difficult. Hysterectomy remains an important therapeutic option inspite of many medical and surgical therapy options for managing the myometrial lesions worldwide.[3] It is the definitive cure for many diseases of which most important is abnormal uterine bleeding, leiomyomas, prolapsed uterus, adenomyosis, endometriosis, pelvic inflammatory disease, tumours etc. There are 2 types of hysterectomy namely vaginal hysterectomy and abdominal hysterectomy. This surgery is accompanied by unilateral or bilateral salpingo-oophorectomy and regional lymph node extraction. Histopathological examination of hysterectomy specimens has significance for both diagnosis and treatment.[3]

Prevalence of myometrial lesions of uterus varies from one country to another and from region to region within the country. Ours is the only government tertiary care hospital in this hilly region for the patients of district. Hence, this study was conducted to understand histopathological patterns of myometrial lesions in hysterectomy samples as there is no data available from this part of India.

METHODS

This is a two years retrospective cross-sectional study from January 2017 to December 2018 done in Department of Pathology, Kodagu Institute of Medical Sciences, Madikeri, Karnataka, India. Institutional ethical committee clearance was taken for conduct of the study with reference no KOIMS/IEC/33/2019-20. Hospital record based universal sampling was used as sampling technique. All the patients who underwent hysterectomy and myomectomy for myometrial lesions of uterus were included in the study. Hysterectomy specimens showing secondaries of malignancy, gross infection, massive haemorrhage and necrosis were excluded from the study.

Proforma for each patient was filled which included demographic details, clinical history and type of surgery done. Gross pathological findings were noted. All the sample specimens were fixed in 10 % formalin, processed and embedded in paraffin, and 3 - 4 µ thickness sections were made. Sections were stained with hematoxylin and eosin stain. The histopathological diagnosis and data were recorded using Microsoft Excel and analysed using Statistical Package for the Social Sciences (SPSS) software. The results were explained in frequency and percentage.

RESULTS

A total of 148 specimens were included in this study. Age range included was from 20 to 65 years. Histopathological examination revealed the maximum cases (54 %) of myometrial lesions in the age group of 41 to 50 years age group followed by age group of 31 to 40 years as shown in Table 1. The mean age of all patients with myometrial lesions was 47.6 years with mean age of leiomyoma patients being 46 years and mean age of adenomyosis patients being 45 years**.** The most common symptom found was abnormal uterine bleeding (72.6 %) followed by pain abdomen (25.2 %).

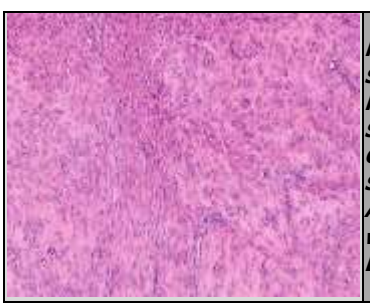

Figure 1. Section Stained with Haematoxylin and Eosin Stain (40x) Showing Mass Composed of Elongated Spindle Shaped Cells Arranged in Fascicles with Features of Leiomyoma

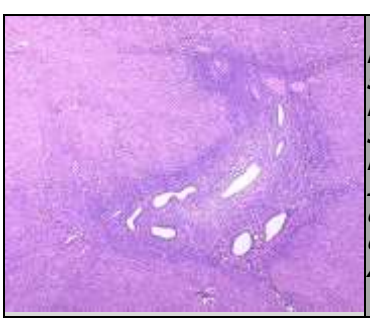

Figure 2 Section Stained with Haematoxylin and Eosin Stain (10x) Showing Myometrium having Islands of Endometrial Glands & Stroma Which is Consistent with Adenomyosis.

Age-Group	Histopathological Diagnosis			
	Leiomyomas (N = 126) (85.1 %)	Adenomyosis (N = 13) (8.8 %)	Leiomyoma with Adenomyosis (N = 9) (6.1 %)	Total N (%) (N = 148)
11 - 20 years	01 (0.8)	00 (0)	00 (0)	01 (0.7)
21 - 30 years	06 (4.8)	01 (7.7)	00 (0)	07 (4.8)
31 - 40 years	39 (30.9)	03 (23.1)	02 (22.2)	44 (29.7)
41 - 50 years	67 (53.2)	07 (53.8)	06 (66.7)	80 (54)
51 - 60 years	10 (7.9)	01 (7.7)	01 (11.1)	12 (8.1)
> 60 years	03 (2.4)	01 (7.7)	00 (0)	04 (2.7)

Table 1. Age Distribution and Histopathological Spectrum of Myometrial Lesions in Hysterectomy and Myomectomy Specimens

	Type of Leiomyomas (N = 126)	N (%)
1.	Intramural leiomyoma	85 (67.4)
2.	Intramural leiomyoma with secondary changes	12 (9.6)
3.	Subserosal leiomyoma	15 (11.9)
4.	Submucosal leiomyoma	05 (3.9)
5.	Intramural with subserosal leiomyoma	09 (7.2)

Table 2. Distribution of Leiomyomas

Histopathological examination done showed the following diagnosis in patients: leiomyoma - 126 (85.13 %) as shown in Figure 1, adenomyosis – 13 (8.79 %) as shown in Figure 2 and leiomyoma with adenomyosis – 9 (6.08 %) as shown in Table 1. Among the leiomyomas, intramural leiomyoma (67.46 %) was the most common followed by

subserosal leiomyoma (11.90 %) as shown in Table 2. There were also patients with both intramural and subserosal leiomyoma (7.14 %). There were no malignant lesions found in present study.

DISCUSSION

Hysterectomy is the most commonly performed major gynecological surgery worldwide and prevalence of hysterectomy varies from country to country, region to region.[4] Hysterectomy has become definitive surgical treatment for abnormal uterine bleeding, fibroids, adenomyosis, endometriosis, pelvic inflammatory disease, uterine prolapse and tumours of reproductive organs.[5]

The clinical presentation and the indication for hysterectomy varies depending upon the pathology of the uterus, it can range from benign to malignant. Total abdominal hysterectomy (TAH) is removal of the uterus, cervix with or without adnexal structures through an incision made on the anterior abdominal wall while vaginal hysterectomy is removal of the uterus by vaginal route. Subtotal or supracervical hysterectomy means removal of uterus leaving cervix inact. Type of hysterectomy depends on the pathology involved and the age of the patient. TAH is associated with increased post-operative complications, prolonged hospital stay and is expensive when compared to other types; but still gynecologists prefer abdominal route over vaginal route due to practice of styles and training habits. Vaginal hysterectomy has less risk and complications; this route is encouraged especially if the disease is confined to uterus. Hysterectomy gives maximum extent of symptomatic relief and satisfaction to the patient. It provides a definitive treatment option for many diseases.[6]

There were total of 148 patients included in this study as described in Table 1. Commonest age range of hysterectomy in present study is 41 - 50 years which is similar to that depicted in other studies.[7,8] The mean age of all patients with myometrial lesions was 47.6 years and age range from 20 to 65 years which was nearly similar to findings by others.[9,10] The peak age for the hysterectomy done in present study was the fourth decade (41 - 50 years). Youngest patient in the study was 20 years who was diagnosed to have leiomyoma and oldest patient was 65 years.

The commonest myometrial lesion observed in present study was leiomyoma as shown in Figure 1. The most common tumours found in women of reproductive age group are uterine leiomyoma. The pathogenesis of abnormal bleeding in leiomyoma is due to increased size of uterine cavity thereby increasing the surface area of the endometrium, vascular alterations of the endometrium, endometrial hyperplasia due to increased estrogen hormone and obstructive effect of leiomyoma on uterine vasculature causing endometrial venule ectasia. This causes congestion in the proximal vessels of myometrium and endometrium. Most women have no symptoms while others may have painful or heavy menstrual cycles. Increased frequency in urination is seen if pressure is put by the fibroid on the urinary bladder. Leiomyoma also causes mild to severe lower back pain or pain during intercourse based on the site and size of the lesion. Leiomyomas show familial history which is supposed to be related to the hormones. Obesity and consumption of red meat are few risk factors associated. Pelvic examination and radiology tests help in the diagnosis. There is no need of therapy if there are no or mild symptoms. There are gonadotropin releasing hormone agonist group of drugs available which may decrease the size of the leiomyomas but are expensive and associated with side effects. If patient is symptomatic, surgery is mandated. Malignant counterparts of leiomyoma i.e. leiomyosarcomas are very rare.[6]

Leiomyomas may form anywhere within the myometrium. The most common location is intramural location (75 %), followed by submucosal (15 %) and last subserosal (10 %). Grossly, secondary changes include necrosis, infarction, haemorrhage and other degenerative changes. Microscopic examination of leiomyomas shows whorled and anastomosing fascicles of spindle shaped to fusiform cells of similar size. These cells have abundant fibrillar and eosinophilic cytoplasm with an elongated nuclei having finely dispersed chromatin with inconspicuous nucleoli.[11] Most leiomyomas have normal karyotypes. However, 40 % cases show chromosomal abnormality.[12] There are variants of leiomyoma which include cellular leiomyoma, bizzarre leiomyoma, haemorrhagic cellular leiomyoma, mitotically active leiomyoma, etc.[13] There are certain risk factors associated which include early menarche. There is an increased risk for mutations in genes controlling myometrial proliferation as early onset of menstrual cycles may increase the number of cell divisions that the myometrium undergoes during the reproductive years.[14]

Also there is increased prevalence of leiomyomas during reproductive years with an increase in age. The important modulators of development of leiomyomas during late reproductive years include hormonal factors in the premenopausal period where there is gradual culmination of stimulation by estrogen and progesterone. There are other risk factors associated which include racial differences, geographic differences, menopause, obesity, exercise, diet, oral contraceptives, hormone replacement treatment, etc.[15] Hyperinsulinemia is also an important risk factor which increases circulating levels of ovarian hormones which in turn promotes myometrial smooth muscle cell multiplication.[16] Majority of women with uterine leiomyoma associated abnormal uterine bleeding (AUB) are treated by hysterectomy.[7]

In present study, we found 126 cases of leiomyoma which were discovered post-hysterectomy and post myomectomy on gross inspection and later confirmed by histopathology. These accounted for about 85.13 % of the total number of cases of myometrial lesions. Maximum cases seen were in the 41 to 50 years age group. The location of various leiomyoma is as described in Table 1. There were 12 cases of intramural leiomyoma with secondary changes.

The secondary changes included hyaline change, mucoid change and cystic change. Most of leiomyomas in present study were small seedling fibroids ranging in size from 0.5 - 1.0 cm and also a few bigger leiomyomata that could not be diagnosed clinically and missed on ultrasound examination. These findings in present study confirmed the significance

of a thorough gross examination of all the specimens and establishing a precise diagnosis by means of histopathological examination for better prognosis and clinical management of the patient. Uterine fibroid is the most common pathology seen in most of the studies till date on hysterectomy specimens. Studies done by Watts WF et al.[17] prevalence of 41.5 % whereas Ranabhat SK et al. had prevalence of 34.6 % which is lower. Abdullah LS et al.[18] reported 30.3 % leiomyomas in their study which again is lower as compared to present study. In a study done by Rahat et al.,[19] there were 73 % cases of leiomyomas among all the myometrial lesions. In a large study of histomorphological features of leiomyomas done in 1845 hysterectomy specimens by Manjula et al.[20] over a period of 2 years there were 23.90 % cases of neoplastic lesions of myometrium of which 99.54 % were leiomyomas.

The second most common myometrial lesion seen in present study was adenomyosis as shown in Figure 2. In women aged 40 years and above who undergo hysterectomy one third of them show adenomyosis irrespective of the indications for hysterectomy. In a study done by Molitor JJ showed prevalence of 281 adenomyosis cases in hysterectomy.[21] On gross examination, adenomyosis may involve uterus locally or diffusely with posterior wall being more commonly involved. In mild adenomyosis, the size of uterus remains unchanged. The pathogenesis of adenomyosis is due to smooth muscle hypertrophy that accompanies the endometrium glands and stroma. Superficial invasion of endometrial glands and stroma into the myometrium is called superficial adenomyosis. Deep adenomyosis is when penetration is clearly within the myometrium causes gross and microscopic pathology.[11] The diagnostic criteria for adenomyosis is presence of endometrial glands and stroma at least one low power field below the basal layer of endometrial gland which is surrounded by myometrium.[11]

Clinical diagnosis alone is usually not sufficient for diagnosis of adenomyosis. Transabdominal sonography and transvaginal sonography are the imaging modalities which play an important role for evaluation of myometrial lesions in an outpatient department setting. The prevalence of adenomyosis varies widely from 5 % to 70 %.[22] This is mostly due to the inconsistencies in the histopathologic criteria for diagnosis of adenomyosis. However, on the contrary, leiomyomas have a higher prevalence up to 80 % in African women and 70 % in Caucasians.[23] Leiomyomas have varying spectrum of loation and size.

Mean age for adenomyosis in study by Ranabhat et al. was 46.1 years which is close to present study where mean age was 45 years. Diagnosis of adenomyosis is rarely done preoperatively as it is usually diagnosed in histopathology as it has no specific clinical symptoms of its own.[24] Preoperative clinical diagnosis of adenomyosis was done in one case in the present study; all other cases either presented with incidental findings or menorrhagia. There were around 6.08 % cases which had both leiomyoma and adenomyosis. There are other studies which have reported similar association. Malignancies of body of uterus are not that frequent in India as compared with other gynaecological malignancies. We did not report any malignancy in present study.

CONCLUSIONS

The present study provides data regarding the histological patterns of myometrial lesions in hysterectomy specimens. It is mandatory that all hysterectomy specimens must be evaluated by histopathological examination for better postoperative medical and surgical treatment of the patients.

Data sharing statement provided by the authors is available with the full text of this article at jebmh.com.
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