



CLINICOPATHOLOGICAL SPECTRUM OF UTERINE LEIOMYOMAS

Pathology

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ABSTRACT

Leiomyoma is the commonest uterine neoplasm affecting females in reproductive age group. Leiomyomas need hormonal milieu for their growth and maintenance. These tumors are benign, but some of the variants and secondary changes may create diagnostic difficulties.

This study included 100 cases of leiomyomas. Clinical findings and the microscopic features in all cases were studied.

The study period was 1 year, from June 2015 to May 2016. Majority of the patients were between 31-50 years (90%). Most common location of leiomyomas was intramural (58%). Degenerative changes were observed in 31 % cases, among which hyaline change was the most common (22%). Two types of leiomyoma variants were seen, amongst which cellular leiomyoma was the commonest.

KEYWORDS

Cellular leiomyoma, Hyaline changes, Leiomyoma, Uterine.

Introduction -

Leiomyoma of the uterus are extremely common neoplasm.¹ These tumors are most frequently seen clinically between the age group of 30 and 45, although they may start developing in the early twenties.² They are rare prior to the menarche, common in reproductive life, have a tendency to regress after the menopause. Complex interactions of sex steroid hormones and local growth hormones with mutation in the normal myometrium are being considered as the possible etiological factors. Leiomyomas need hormonal milieu for their growth and maintenance as evidenced by the molecular studies; that they exhibit more estrogen receptor than normal myometrium.^{1,3,4} Leiomyomas are usually asymptomatic, however depending on their size, location and hormonal effects the clinical features may vary. The commonest clinical manifestation are menorrhagia, dysmenorrhoea, pain in abdomen, mass per abdomen and mass effect.⁵ Leiomyomas undergo secondary changes due to estrogenic stimulation. To elaborate on these pathological changes the present study was taken up.

Objective-

To study and analyze various clinical features and histopathological features and various changes within uterine leiomyomas in hysterectomy specimens.

Materials and methods -

The present study was conducted in the Department of Pathology, Government Medical College, Miraj, Maharashtra, India over a period of 1 year from June 2015 to May 2016. Total 100 hysterectomy specimens with or without salpingo-oophorectomy, diagnosed clinically and radiologically as uterine fibroids were subjected to examination. Brief clinical data was retrieved with respect to age, parity, clinical manifestation, sonographic findings and basis of diagnosis. On receipt of surgical specimen, they were fixed in 10% neutral buffered formalin for 24-48 hours. A detailed gross examination of uterus, cervix with or without bilateral adnexae were carried out. Well circumscribed grey to tan masses with whorled appearance were considered as leiomyoma. Details related to its location, number and secondary changes were noted. A minimum of two sections from cervix, endomyometrium and one section each of fallopian tubes and ovaries were taken and representative sections from leiomyomas and other abnormal areas were also taken. The sections were processed and paraffin embedded. The blocks were sectioned and stained with hematoxylin and eosin (H&E). A detailed microscopic examination of all the sections was done. The

histopathological findings of the masses with special focus on secondary changes, variants, nuclear atypia, mitosis and coagulative necrosis were studied.

Results

100 leiomyoma cases in hysterectomy specimens with or without salpingo-oophorectomy were studied. In the present study, patients with leiomyoma were in the age group of second to seventh decades of life. Majority 90%(90 cases) were in the age group of 31-50 years of life. (Table I)

Table I. Age wise distribution of leiomyoma

| Age in years | Number of cases | Percentage |
|--------------|-----------------|------------|
| 21 – 30 | 03 | 3% |
| 31 – 40 | 40 | 40% |
| 41 – 50 | 50 | 50% |
| 51 – 60 | 05 | 5% |
| 61 – 70 | 02 | 2% |
| Total | 100 | 100% |

Multiparous women 93%(93 cases) were commonly affected followed by primipara 5%(5 cases) and nulliparous women 2%(2 cases). Menorrhagia was the commonest symptom constituting 38%(38 cases), followed by pain in abdomen in 19%(19 cases) and dysmenorrhoea in 17%(17 cases). (Table II)

Table II. Chief complaints in patients with leiomyoma

| Chief complaint | No. of cases | Percentage |
|--------------------------|--------------|------------|
| Menorrhagia | 38 | 38% |
| Pain in abdomen | 19 | 19% |
| Dysmenorrhoea | 17 | 17% |
| Mass per abdomen | 15 | 15% |
| Mass per vagina | 09 | 9% |
| Post menopausal bleeding | 02 | 2% |
| Total | 100 | 100% |

Most of the cases showed single leiomyoma accounting for 70%(70 cases), in the remaining 30%(30 cases) the number varied from 2 to 10. In the present study, with respect to location, majority 58%(58 cases) were intramural leiomyomas (Fig. 1) followed by subserosal 28%(28 cases)(Fig. 1) and submucosal leiomyoma 14%(14 cases)(Table III).

Table III. Location and number of leiomyomas in uterus

| Location | Single | Multiple | Total No. | Percentage |
|------------|--------|----------|-----------|------------|
| Intramural | 38 | 20 | 58 | 58% |
| Subserosal | 20 | 08 | 28 | 28% |
| Submucous | 12 | 2 | 14 | 14% |
| Total | 70 | 30 | 100 | 100% |

Degenerative changes were observed in 31% leiomyoma(31 cases). Among these, 22% leiomyomas (22 cases) showed hyaline changes (Fig. 3)which constituted the most common degenerative change observed in this study, 4% leiomyomas (4 cases) showed cystic change, 3% leiomyomas (3 cases) showed calcification, 1% leiomyoma (1 case) showed red degeneration (Fig. 4) and 1% leiomyoma (1 case) showed myxoid change (Table IV). Among the variants of leiomyomas two cases of cellular leiomyoma (Fig. 5) and a single case of lipoleiomyoma (Fig. 6)were observed.

Table IV. Degenerative changes within leiomyoma

| Degenerative change | Number | Percentage |
|---------------------|--------|------------|
| Absent | 69 | 69% |
| Present | 31 | 31% |
| Hyalinization | 22 | 22% |
| Cystic change | 04 | 4% |
| Calcification | 03 | 3% |
| Red degeneration | 01 | 1% |
| Myxoid change | 01 | 1% |

Microscopic examination of endometrium revealed proliferative phase endometrium in 60%(60 cases), secretory phase in 15%(15 cases) and endometrial hyperplasia without atypia in 10%(10 cases) (Table V).

Table V. Endometrial changes with leiomyomas

| Endometrial change | Number | Percentage |
|---|--------|------------|
| Proliferative phase | 60 | 60% |
| Secretory phase | 15 | 15% |
| Endometrial hyperplasia without atypia | 10 | 10% |
| Senile cystic atrophy | 08 | 8% |
| Atrophic endometrium | 05 | 5% |
| Proliferative with adenomyomatous polyp | 02 | 2% |
| Total | 100 | 100% |

Dual pathology of leiomyoma and adenomyosis was noted in 28%(28cases).



Fig. 1) Uterus with multiple leiomyomas. Gross showing intramural and subserous leiomyomas

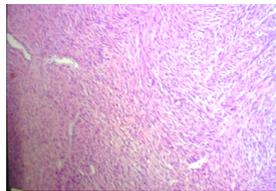


Fig. 2) Leiomyoma (H & E, X10)

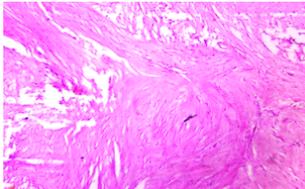


Fig. 3) Leiomyoma showing hyaline degeneration (H & E, X10) Fig. 4) Leiomyoma showing red degeneration (H & E, X10)

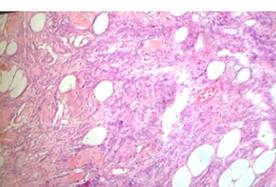
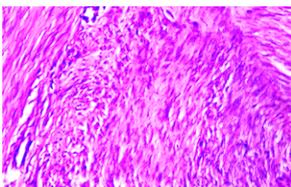
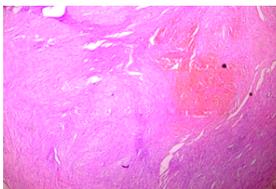


Fig. 8) Cellular leiomyoma (H & E, X10) Fig. 6) Lipoleiomyoma. Leiomyoma with adipocytes within the smooth muscle masses (H & E, X10)

Discussion

Leiomyomas are benign uterine neoplasm for which the most common gynaecological procedure performed is hysterectomy.

Leiomyomas are commonly seen in women of reproductive age.^{1,8,9} The present study had majority of the cases between 31 and 50 years (90%) of the age group similar to studies by Ashraf¹⁰ and Begum and Khan.¹¹

Literature search shows patients with uterine leiomyomas are asymptomatic, the most common clinical manifestation noted is menorrhagia due to increased vascularity, increased endometrial surface and altered uterine contractility.^{11,12} In the present study menorrhagia was the most common clinical manifestation accounting to 38%(38 cases) followed by pain in abdomen 19%(19 cases). Menorrhagia was also the presenting complaints in studies by Sarfraz¹³, Karthikeyan¹⁴, Gowri¹⁵, Rather¹⁶ and Manjula K¹⁷.

In the present study, the number of leiomyomas varied from 1 to 10 of which 70%(70 cases) had single leiomyoma in concordance with Rosario.¹⁸ Most of the leiomyomas were intramural in location 58%(58 cases), similar to studies by Begum and Khan¹¹, Gowri¹⁵ and Rosario.¹⁸

This study noted secondary degenerative changes in 31%(31 cases). The degenerative changes in leiomyomas occur due to inadequate blood supply which may result in hyalinization most commonly followed by cystic, hemorrhage, myxoid change, hydropic degeneration or calcification. The type of degenerative change depends on the rapidity and degree of vascular insufficiency.^{11,19,20} Our study noted hyalinization as the most common secondary change similar to the study by Begum and Khan¹¹ and Persaud and Arjoon.¹⁹ Lipoleiomyoma is rarer variant of uterine leiomyoma showing histological features of varying amount of mature adipocytic cells amidst smooth muscle cells.²¹ In the present study we encountered 1 case of lipoleiomyoma.

Cellular leiomyoma is defined by the World Health Organization as leiomyoma having significantly high cellularity compared to surrounding myometrium. They lack tumor necrosis, atypia and mitotic figures.^{1,21} Their incidence is usually <5%, in the present study we encountered 2 ((2%)cases of cellular leiomyoma.^{1,21}

In the present study, the most common endometrial changes in association with uterine leiomyoma were proliferative phase (60%) and hyperplasia without atypia(10%). Hyperplasia without atypia may be due to hyperestrogenic status in accordance with the study by Roasrio¹⁸, Purandare and Jhalam²², Sanyal²³, and Chethana.²⁴ Dual pathology of adenomyosis and leiomyoma was noted in 28%(28 cases) of patients in the present study similar to studies by Deligdisch and Loewenthal²⁵, Rizavi²⁶ and Rani and Thomas.²⁷ Coexistence of these lesions is also due to unopposed estrogen and entrapment of glands within hypertrophied myometrium.

Conclusion

Leiomyoma is the most common benign tumor of the uterus. They are commonly seen in the perimenopausal females and present with menorrhagia, pain in abdomen or dysmenorrhoea. Intramural site was the most common location, hyaline change was the most common degeneration and cellular variant was the most common subtype seen in our study. Histopathology is mandatory for confirmed diagnosis and ensuring optimal management.

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