

Histopathological study of Endometrium in uterine leiomyoma

¹Dr. Sonia Verma, Junior Resident, Department of Pathology, R.N.T. Medical College, Udaipur.

²Dr. Shashi Sujnani, Ex – Professor, Department of Pathology, R.N.T. Medical College, Udaipur.

Corresponding Author: Dr. Sonia Verma, Junior Resident, Department of Pathology, R.N.T. Medical College, Udaipur.

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Abstract

Background: Uterine leiomyomas account for more than 75% of the benign tumours in women of reproductive age group. Studies have shown the presence of estrogen and progesterone receptors in the endometrium and myometrial tissue. They play an important role in regulating their growth.

Objectives: To study the histopathological changes in endometrium in cases of uterine leiomyoma. To study and identify endometrial changes which can help in predicting the development or diagnosis of uterine leiomyoma.

Methods: A total of 100 cases were studied during a period of 1 year from December 2013 to December 2014 in which uterine leiomyoma was present on gross examination. Then the obtained parameters were evaluated using descriptive statistical analysis. Significance was assessed at 5 % level of significance. The results were calculated using Chi square test and P value was measured.

Result And Conclusion: Varied endometrial patterns were seen in leiomyomatous uteri such as presence of dilated/ distorted glands, glands parallel to the long axis of the myometrium, glands separated by muscle fibres, total or subtotal glandular atrophy, focal loss of surface

epithelium. Of these total and subtotal glandular atrophy showed significant association (p value < 0.0001 and 0.008 respectively) with submucosal leiomyoma. Thus if endometrial curettings obtained show a mixed picture of glandular atrophy, endometrial hyperplasia, together with many distorted, elongated or dilated glands and muscle fibres between glands, one can suggest the presence of uterine leiomyoma.

Keywords: Leiomyoma, endometrium, atrophy.

Introduction

Uterus is one of hormone responsive vital reproductive organ of the female. Studies have shown the presence of estrogen and progesterone receptors in the endometrium and myometrial tissue. They play an important role in regulating their growth.¹ Steroid hormone control of endometrial epithelial, stromal and presumably endothelial cells is mediated by estrogen and progesterone receptors. These steroid receptors are specific proteins concentrated exclusively in the nuclei of both endometrial epithelial and stromal cells, as well as the endothelial cells of stromal capillaries. They have high affinity to bind estradiol and progesterone, respectively.²

Uterine leiomyomas account for more than 75% of the benign tumours in women of reproductive age group.

These tumors arise from smooth muscle cells of myometrium.³

There is increased evidence that myomas have a genetic basis and that their growth is related to genetic predisposition, hormonal influence and various growth factors.⁴

The content of hormonal receptors has been shown to be higher in the fibroid tissue.¹

This study will help to study the histopathological changes in endometrium in cases of uterine leiomyomas.

Objectives

1. To study the histopathological changes in endometrium in cases of uterine leiomyoma.
2. To study and identify endometrial changes which can help in predicting the development or diagnosis of uterine leiomyoma.

Materials and Methods

This prospective study was performed on hysterectomy specimens.

A total of 100 cases were studied during a period of 1 year from December 2013 to December 2014 in which uterine leiomyoma was present on gross examination.

Clinical details including age, parity, complaints and menstrual history were obtained from patients. Following the receipt of surgical specimens, they were fixed in 10% formalin for 24-48 hours. A detailed gross examination was performed with respect to size and weight of uterus, location and size of fibroids, secondary changes and status of endometrium and endometrial polyp if any was noted.

Tissue bits from representative areas of the fibroids and endometrium were taken for histopathological examination, processed and paraffin blocks were made. Sections were cut at 6 micron thickness and stained with hematoxylin and eosin. Microscopic sections were

studied and following histologic features were recorded:

1. Endometrial parameters- thickness of endometrium, phase, number and appearance of glands within the given area and stromal changes.
2. Myometrial parameters- presence/ absence of adenomyosis, type/ variant of leiomyoma and secondary/ degenerative changes in the leiomyoma.

The endometrial area was calculated using a standard 2-mm length multiplied by the measured width.

Then obtained parameters were evaluated using descriptive statistical analysis. Significance was assessed at 5 % level of significance. The results were calculated using Chi square test and P value was measured.

Result

Table 1: Age Distribution

Age in years	Number	%
21-30	3	3
31-40	36	36
41-50	50	50
51-60	9	9
61-70	2	2
Total	100	100

Table 1: shows that patients with leiomyoma were aged between 3rd and 7th decade of life. Majority of patients (86%) were in 4th and 5th decade of life.

Table 2: Parity Distribution

Parity	Number	%
Nulliparous	5	5
Primipara	10	10
Multiparous	85	85
Total	100	100

Table 2: shows that 85 out of 100 women with leiomyoma were multiparous

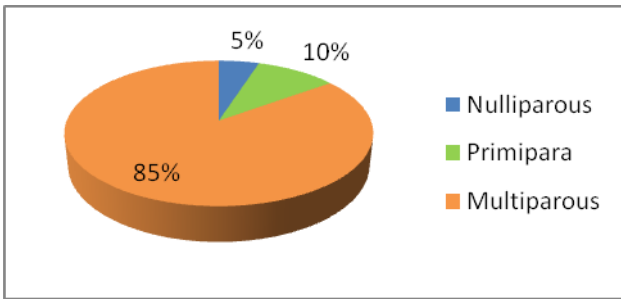


Chart 1: Parity Distribution

Table 3: Location of Fibroids

Location	Number (n=100)	%
Intramural	61	61
Subserosal	4	4
Submucosal	8	8
Intramural + Subserosal	21	21
Intramural + Submucosal	5	5
Submucosal + Subserosal	1	1

Table 3: shows that 61% of the cases had intramural leiomyoma, 4% had subserosal leiomyoma and 8% had submucosal leiomyoma . The remaining 27 cases had leiomyomas in more than one location.

Table 4: Presenting Complaints

Present illness	Number (n=100)	%
Menorrhagia	52	52
Mass per abdomen	17	17
Pain abdomen	21	21
Mass per vagina	23	23

Table 4: shows that menorrhagia was the the commonest symptom among patients with leiomyoma constituted (52%) followed by mass per vagina (23%) , pain abdomen (21%) and mass per abdomen (17%).

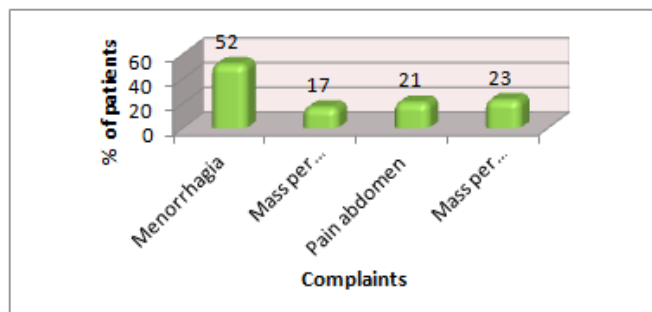


Chart 2: Presenting Complaints

Table 5: Endometrial Area

Endometrial area (Sq. mm)	Number (n=100)	%
<1	7	7
1-4	58	58
4-10	27	27
>10	8	8

Table 5 shows that majority of the leiomyomatous uteri had an endometrial area ranging from 1-4 sq.mm (58%)

Table 6: Endometrial Phase

Endometrial Phase	Number (n=100)	%
Proliferative phase	49	49
Secretory phase	20	20
Simple hyperplasia	6	6
Senile cystic atrophy	11	11
Secretory hyperplasia	5	5
Secretory phase + adenomatous polyp	3	3
Proliferative phase + adenomatous polyp	5	5
Complex atypical hyperplasia	1	1

Table 6: shows that out of 100 cases, proliferative endometrium was noted in 54% followed by secretory endometrium in 23% cases , endometrial hyperplasia in 12% and atrophic endometrium in 11% cases .

Table 7: Epithelial Cell Changes

Epithelial Cell Changes	Number (n=100)	% SM(14) Other locations(86)		P value
Dilated/ distorted glands	56	8(57.14%)	48(55.81%)	0.92
Endometrial glands parallel to myometrium	48	6(42.85%)	42(48.83%)	0.67
Endometrial glands separated by muscle fibres	27	2(14.28%)	25(29.06%)	0.24
Total glandular atrophy	8	6(42.8%)	2(2.32%)	<0.0001
Subtotal glandular atrophy	3	2(14.2%)	1(1.16%)	0.008
Focal loss of surface epithelium	7	0	7(8.13%)	0.26
Absent	26	1(7.14%)	25(29.06%)	0.083

Table 7: shows that among the various epithelial cell changes , dilated and distorted glands (Fig. 1)were seen in 56% cases and arrangement of glands parallel to long axis of yometrium were seen in 48% cases, followed by 27% of the cases showing endometrial glands separated by muscle fibres .Total glandular atrophy (Fig. 2)and subtotal glandular atrophy was present in 8% and 3% cases respectively .

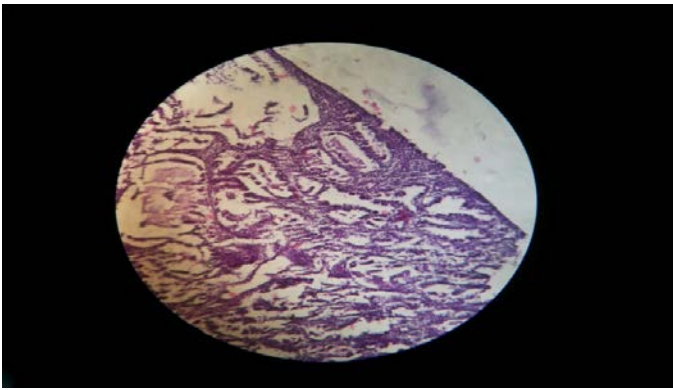


Fig. 1: Dilated and distorted glands (H &E 10X)

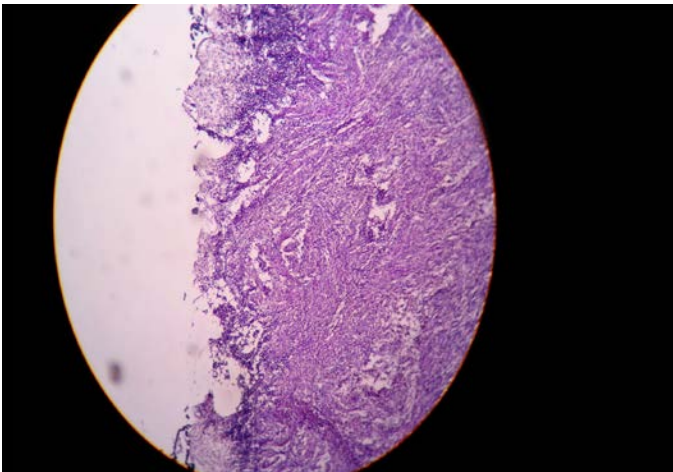


Fig. 2: Total glandular atrophy (H &E 10X)

Discussion

In the present study, the most common age group in which leiomyoma was present was between 41-50 years (50%). These findings were similar to that observed by Mannem in, 2010 who studied that patients with leiomyoma were mostly in the age range of 41-50 years (46%).⁵ Reddy and Malathy in 1963 stated that leiomyoma was most common between 31-40 years (50%).⁶ Rosario Pinto in 1968 stated that maximum no. of patients with leiomyoma uterus were in the age group 31-40 (44.77%).⁷ Sajjanar in 2011 reported that most common age group for leiomyoma uterus was 31-40 years (46%).⁸

In the present study, leiomyomas were mostly seen in multiparous women constituting 85% cases. Similar findings were observed in other studies. Our findings

are comparable with study done by Rosario Pinto in 1968 who found multiparity in 76% cases.⁷ Also Chhabra and Jaiswal in 1996 as well as Mannem in 2010 found multiparity in 82% and 81% cases respectively.^{9,5}

In the present study, majority of the patients with uterine leiomyomas presented with menorrhagia (52%). Menorrhagia was also the presenting complaint in other studies.^{9,10,5}

Majority of leiomyomatous uteri in the present study showed proliferative endometrium (54%), an observation comparable to the study done by Rosario Pinto in 1968 who also found highest incidence of proliferative endometrium in 51.1% cases.⁷ Sanyal et al in 1981 also reported proliferative endometrium in 51% cases. This indicates the hyperestrogenic states associated with fibroids.¹¹

In the present study, secretory endometrium was seen in 23% cases. Similar findings were observed in other studies.^{7,12}

The incidence of atrophic endometrium in the present study was 11% which is similar to the study done by Rosario Pinto in 1968 who found atrophic endometrium in 11% cases.⁷ The atrophic endometrium associated with leiomyoma was probably due to the mechanical and hormonal factors (Deligdish and Loewenthal, 1970).¹³

Of the various forms of endometrial hyperplasia (12%), simple hyperplasia accounted for 6%, while complex atypical hyperplasia accounted for only 1%. The findings were similar to the study conducted by Teleman and Mihailovici (2003).¹⁴

Table 8: Comparison of Menstrual Phase as per Last Menstrual Period with Endometrial Phase on Microscopy in Various Studies

Studies	Secretory phase (p value)	Menopause/Atrophic endometrium (p value)
Mannem (2010)	<0.001(S)	<0.001(S)
Present Study (2015)	<0.0001(S)	<0.0001(S)

S = Significant

The result is in agreement with the study done by Mannem in 2010 in which both secretory phase and menopausal state was correlating with microscopic phase (p value <0.001 - significant).⁵ Also, in a proportion of the patients who were in secretory phase as per LMP, the endometrium showed persistence of proliferative endometrium (30.7%) similar to study done by Mannem in 2010 who reported the same in (30.3%) cases.⁵ Similarly, persistent proliferative phase was also noted by Pavic et al.¹⁵

Comparison of endometrial epithelial cell changes in leiomyomatous uteri in various studies

In our study, of the various epithelial cell changes, total or subtotal glandular atrophy were most commonly seen in uteri having submucous leiomyoma with 42.8% and 14.2% respectively and showed significant association (p<0.0001) comparable with the study conducted by Mannem in 2010 in which total glandular atrophy was seen in 57.1% cases of submucous leiomyoma with significant association (p value <0.001) and subtotal glandular atrophy was present in 19.1% cases of submucous leiomyoma with significant association (p value <0.002).⁵ Deligdish and Lowenthal in 1970 found that atrophic changes of

endometrium were the most constant morphological change in the presence of submucous leiomyoma (83%).¹³ Sharma et al in 1979 also observed significant association with atrophy of glands in 75% cases respectively.¹⁶

Conclusion

This study suggest that if endometrial curettings obtained show a mixed picture of glandular atrophy, endometrial hyperplasia, together with many distorted, elongated or dilated glands and muscle fibres between glands, one can suggest the presence of uterine leiomyoma.

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