Original Research Paper

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Study of Endometrial Changes in Uterine Leiomyoma

MEDICAL SCIENCE

KEYWORDS : Endometrium, Leiomyoma, Proliferative pattern.

Dr.G. Selvambigai	Associate Professor of Pathology, Government Chengalpattu Medical College,
*** Dr. M. Kuzhalmozhi**	Assistant professor, Department of Pathology, Government Chengalpattu Medical College, Chengalpattu, Kanchipuram Dt. Pincode - 603001, * CORRESPONDING AUTHOR
Dr. S.Ravi	Professor & HOD of Pathology, Government Chengalpattu Medical College, Chengalpattu.
Dr. I. Vijay Sathish Kumar	Associate Professor of Pathology, Government Chengalpattu Medical College, Chengalpattu.

ABSTRACT

Uterine leiomyoma is the most common benign tumor in females. It is steroid dependent tumor which causes significant endometrial changes. AIM: To study about the leiomyoma and its endometrial pattern which helps to diagnose it on endometrial curetting, to evaluate the relationship between them and correlate their etiological factor. MATERIAL AND METHODS: 100 hysterectomy specimens with leiomyoma were studied. The endometrial tissue bit was processed and evaluated for pattern and endometrial gland changes. Parameters were analyzed and results were studied by descriptive statistical analysis. RESULTS: Leiomyoma commonly occurred in the age of 41-50 yrs. Solitary leiomyoma and intramural fibroid was a common presentation. Proliferative pattern and hyperplastic endometrium were the common manifestations. Endometrial gland changes such as dilated glands, glands parallel to myometrium, thinning of endometrium were seen. CONCLUSION: Both hormonal and mechanical effect was responsible for endometrial changes in leiomyoma.

INTRODUCTION:

The incidence of uterine leiomyoma accounts for 75% of benign tumor in reproductive age group. They are steroid dependent tumors. They have increased estrogen receptor levels and increased responsiveness to estrogen compared with normal myometrial cells, partly due to increased expression of aromatase enzyme. Mostly leiomyomas present with abnormal uterine bleeding, pain, pressure effects such as painful defecation, urinary frequency and infertility. In pregnant women they may cause spontaneous abortion, particularly if they are in submucosal location. Uterine leiomyomas are of great concern as they can undergo degeneration, necrosis or calcification.

The endometrium is the inner most dynamic layer of the uterus. Uterine leiomyoma cause significant changes in the endometrium. The aim of this study is to assess the endometrial pattern in women operated for uterine leiomyomas and to study the endometrial gland changes such as type of endometrium and its thickness, changes in structure and pattern of endometrial glands, myometrial changes adjacent to endometrium, number, size and position of leiomyomas. The main objective of studying endometrial changes in leiomyoma is to find out the relationship between the two and possible correlation of etiological factors. Studying endometrial changes will help in predicting the development and in diagnosing uterine leiomyomas histopathologically in situations where the other methods of diagnosis are not available.

Materials and methods:

Study place: Department of Pathology and Department of Obstetrics and Gynecology, Chengalpattu Medical College Hospital, Chengalpattu. **Study design**: This descriptive study was conducted during the period, June 2013 to August 2013. Ethical clearance for the study was obtained from the Institutional Ethics Committee of Chengalpattu Medical College, Chengalpattu. **Study population**: A total of 100 hysterectomy cases for leiomyoma received in Department of Pathology during this period were selected. Written consent was obtained from all the participants. Brief clinical data with respect to age, clinical presentation, parity and menstrual phase was obtained.

Methods: The specimens were processed as per standard grossing protocols. Gross examination was performed with respect to size and weight of uterus, number and location of leiomyomas. Tissue bits from endometrium were taken for histopathological examinations, processed, and 5 micron thick sections stained with hematoxylin and eosin were studied for endometrial parameters such as thickness of endometrium, endometrial pattern and appearance of glands.

Statistical analysis: Parameters were analyzed and results were tabulated. Data obtained were coded and entered into the Microsoft excel spread sheet. Data's were expressed in frequency and proportions. All statistical analysis was performed using SPSS statistical software version 16. Charts were prepared using Microsoft excel 2007.

Results:

The study samples were in the age group 30-60 years with peak incidence in the 4th decade (61%) followed by 3rd decade (30%) and 5th decade (9%). 78 out of 100 women were multiparous. The most common symptom was menorrhagia which accounted for 63%, pain abdomen (22%), mass per abdomen (15%).

The number of leiomyoma varied from solitary in 69% of specimens, two in number in 8% of specimens and multiple leiomyoma (leiomyomata) in 23% of specimens. Analyzing the size, 70% of leiomyoma fall within the range of 0-5cm, 26% in the range of 5-10cm and 4% were greater than 10cm.

Regarding presence of specific change in the leiomyoma, 4% showed myxoid degeneration, 1% showed red degeneration, 2% showed hyaline degeneration, 2% showed hydropic degeneration, 1% showed calcareous degeneration, 2% had focal areas of hemorrhage, 1% showed focal areas of congestion and the rest (87%) showed no secondary changes. With

regard to position of leiomyoma 64% were Intramural, 13% were subserosal, 13% were submucosal, 9% were both Intramural and subserosal and 1% were both Intramural and submucosal. Adenomyosis was seen in 16% of cases.

Among the specimens studied, 21% of endometrium showed secretory pattern, 18% showed atrophic endometrium, 45% showed proliferative pattern (Fig-1), 16% showed endometrial hyperplasia, (both accounting for 61%), thereby suggesting estrogenic predominance (Table-1).

The leiomyoma - related endometrial changes were noted in 55 out of 100 cases. Dilated and distorted glands accounts for 39%, glands parallel to long axis of myometrium (Fig-2) accounts for 39%, glands separated by muscle fibres (Fig-3) accounts for 20 %, and glandular atrophy (Fig- 4) in 18 % of cases. (Table-2).

TABLE -1: ENDOMETRIAL PATTERN

ENDOMETRIAL PATTERN	FREQUENCY (N=100)	PERCENTAGE (%)
Proliferative pattern	45	45.0
Hyperplasia of glands	16	16.0
Secretory pattern	21	21.0
Atrophic pattern	18	18.0

FIG-1- PROLIFERATIVE ENDOMETRIUM

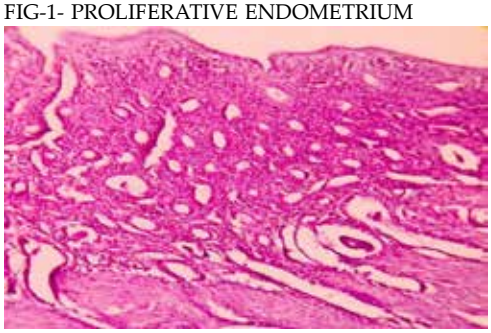
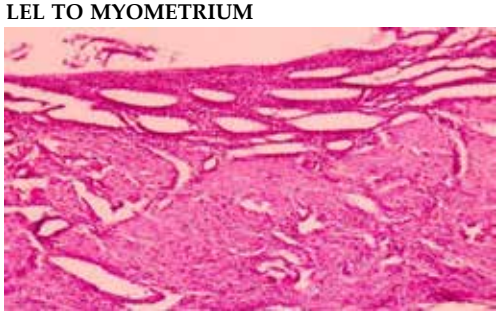


TABLE-2: LEIOMYOMA RELATED ENDOMETRIAL CHANGE

LEIOMYOMA RELATED ENDOMETRIAL CHANGE	FREQUENCY N=100	PERCENTAGE %
Absent	45	45.0
Present	55	55.0
Dilated/distorted glands	39	39.0
Glands parallel to myometrium	39	39.0
Endometrialglands separated by muscle fibres	20	20.0
Glandular atrophy	18	18.0

FIG-2- DILATED AND DISTORTED GLANDS PARALLEL TO MYOMETRIUM



Discussion:

Uterine leiomyoma occurs in more than two third of women and it is the leading indication for the most common major gynecological surgery in women. This study was conducted in 100 hysterectomy cases for leiomyoma received in Department of Pathology during 3 month period. In our study, Leiomyoma was more common in the age group of 41-50 yrs. This is in concordance with study done by Gull B et al stating that leiomyoma is associated with perimenopausal age group due to hormonal imbalance [1].

In this study, most of the leiomyoma cases were seen in multiparous women (78%). This is in concordance with studies done by Chhabra S et al [2] and Rosario et al [3]. This is due to increased estrogen level. Growth of fibroids is regulated by estrogen and progesterone. They display reversible shrinkage after treatment with Gonadotropin-releasing hormone agonist.

In present study, majority of them presented with menorrhagia (63%) which is similar to study done by Vollenhoven et al [4] and Chhabra S et al [5]. Solitary leiomyoma was common (69%) and intramural fibroid (64%) was the commonest manifestation. 70% of them fall in the size of 0-5cm in diameter. Myxoid degeneration is the commonest change seen. This is in accordance with study done by Mbarki chaouki et al [6]

The endometrium is a dynamic tissue that undergoes physiologic and characteristic morphological changes during the menstrual cycle. During the Proliferative phase, which is mediated by estrogen, glands are straight, tubular structures lined by regular, tall, pseudo stratified columnar cells. Mitotic figures are numerous. The endometrial stroma is composed of thickly compacted cells that have scant cytoplasm but abundant mitotic activity. During the secretary phase, which is mediated by progesterone, glands are dilated, tortuous having a serrated or saw-toothed appearance. The stroma is edematous with congested blood vessels. The changes in endometrium caused by leiomyoma include hyperplasia of endometrial glands, distortion of glands, thinning of endometrium especially at the margins of the leiomyoma.

In the present study, among the 100 specimens studied 21% of endometrium showed secretory pattern, 18% showed atrophic endometrium , 45% showed proliferative pattern , 16% showed endometrial hyperplasia, thereby suggesting estrogenic predominance.

In this study of 100 cases, 55 of them showed leiomyoma related endometrial changes. In this, dilated and distorted glands accounts for 39% , glands parallel to long axis of myometrium accounts for 39% (Fig-2), glands separated by muscle fibres accounts for 20% (Fig-3) and glandular atrophy in 18 % of cases (Fig-4) which is similar to the study done by L.Deglidish et al [8], Patterson-Keels LM et al [9], Mannem Chethana et al[10] .

Atrophy of the endometrium, distortion and dilatation of glands could be the result of mechanical pressure exerted by the leiomyoma. Similarly hyperplasia of glands could be due to hormonal imbalance [8], [11].

FIG-3- ENDOMETRIAL GLAND SEPARATED BY MUSCLE FIBRES.

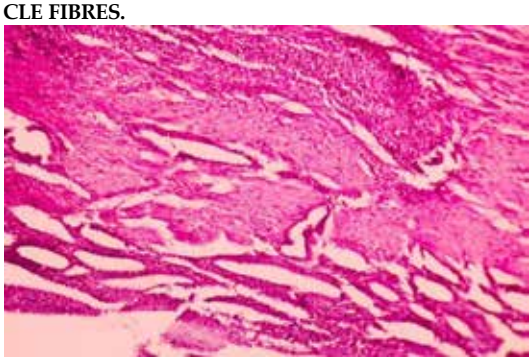


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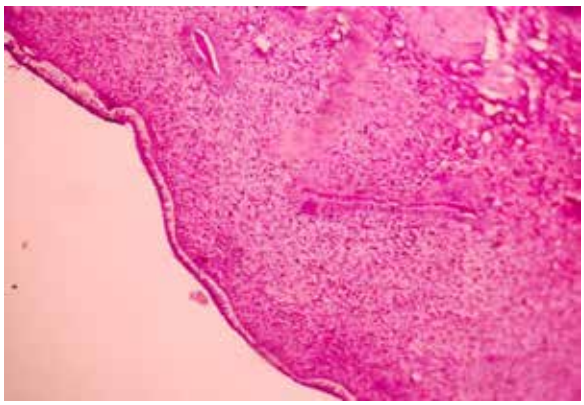
FIG 4- GLANDULAR ATROPHY OF ENDOMETRIUM OVERLYING SUBMUCOUS LEIOMYOMA.



Conclusion:

We conclude that Proliferative phase and hyperplasia of glands were the predominant pattern of endometrium suggesting an estrogenic influence. Myometrium showed features of adenomyosis. Solitary leiomyoma out-numbered multiple ones. Only 13% of specimens showed degeneration. Most of the leiomyoma were 0-5cm diameter in size and Intramural was the commonest position of leiomyoma. Distortion of glands, glands parallel to long axis of myometrium were the findings seen in most of the cases particularly in endometrium overlying submucous leiomyoma. Different pattern of endometrial changes were due to hormonal and mechanical effect exerted by the leiomyoma.

Thus, study of endometrial changes helps in suspecting the possibility of uterine leiomyoma. Endometrial curetting can be used as a diagnostic tool where recent diagnostic modalities such as ultrasound, MRI are not available for evaluation of menorrhagia which is most commonly due to Leiomyoma. Thus, studying the histology of endometrium, will be helpful in suspecting leiomyoma in symptomatic cases who did not undergo imaging studies.

Acknowledgements:

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