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Original Article

Clinicopathological correlation of endometrial, myometrial and ovarian pathologies with secondary changes in leiomyoma

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ABSTRACT

Background: Leiomyomas are the most common benign uterine neoplasm in women of reproductive age group. Uterine leiomyoma are steroid dependent tumors. Leiomyomas are diagnosed by the clinical examination, ultra sound and histopathological examination of the hysterectomy specimens. The aim of this study was to know the clinical symptoms and to diagnose endometrial, ovarian, and other associated coexisting pathologies with leiomyoma and their correlation with leiomyoma.

Materials and Methods: Present study was conducted on hysterectomy specimens between January 2008 to 31 December 2015 in the Pathology Department of Rural Institute of Medical Sciences and Research, Saifai, Uttar Pradesh, India. Specimens were grossly examined, sectioned and hematoxylin and eosin stain was applied. Slides were reviewed by pathologist and diagnosis was made.

Results: A total of 437 patients were included. The common age group of patients with leiomyoma was 31-40 (42.10 %). Menorrhagia (60.86 %) was the prime clinical symptom. Among endometrial pathologies and changes, proliferative phase was maximum (48.51 %) and endometrial hyperplasia was (5.03%) . Proliferative phase was seen more with degenerative changes (42.1%) and hyaline degenerative was frequent (15.33 %). Adenomyosis was also seen (15.10 %). The common pathologies in ovary were simple serous cyst (6.40 %).

Conclusion: Leiomyoma uteri is a myometrial pathology presenting with clinical symptom of menorrhagia. Proliferative phase, endometrial hyperplasia were common endometrial changes and pathology. Adenomyosis was also common. Chocolate cyst in ovary was also seen which all shows a strong association of hyperestrogenic state being responsible for leiomyoma and all associated pathologies. squamous cell carcinoma were also identified. Among infections Trichomoniasis and candidiasis were seen.

INTRODUCTION

Leiomyoma is the most common, solid, benign monoclonal tumor of smooth muscle.[1] It is synonymously called as fibromyomas , fibroid, myoma or fibroleiomyoma. Leiomyomas are commonly encountered in women of reproductive age group accounting for 5- 20 %. They are present in about 80% of all hysterectomy specimens.[2]

Leiomyomas are generally asymptomatic, depending on

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Table1: Age group of patients diagnosed with leiomyoma

Age	Under 20 years	21-30 years	31-40 years	41-50 years	51-60 years	61-70 years	71 years and above	Total
No. of patients	1(0.22%)	38 (8.69%)	184 (42.10%)	178 (40.73%)	30 (6.86%)	5 (1.14%)	1 (0.22%)	437

their size, location and hormonal effect. The commonest clinical manifestations are menorrhagia, dysmenorrhoea, abdominal mass, abdominal pain. Leiomyoma need hormonal milieu for their growth and maintenance as evident by the molecular studies that leiomyoma exhibit more estrogen receptors than normal myometrium.[3] In leiomyoma unopposed estrogenic stimulation manifests commonly as endometrial proliferative phase or hyperplasia.[4] The clinical diagnosis of myoma is usually based on the finding of an enlarged, mobile uterus with an irregular contour on bi manual examination or an incidental finding on trans abdominal sonography. But ultra sonographics are also only suggestive, the final diagnosis is made by histopathologist. Currently there is insufficient and scanty data regarding associated pathologies in leiomyoma. So, this study was planned to determine the clinical symptoms and coexisting endometrial, myometrial, ovarian and other pathologies which are associated with leiomyoma uteri.

MATERIALS AND METHODS

This is tertiary care hospital based cross- sectional study carried out in Rural Institute of Medical Science and Research, Saifai, Etawah (Uttar Pradesh) from January 2008 to 31 December 2015. Women who had undergone abdominal, vaginal or laparoscopic hysterectomy with or without salpingo-oophorectomy were included. All the hysterectomy specimens received in the histopathology section of Pathology Department were examined grossly which also included size, weight, location, secondary changes in leiomyoma, status of endometrial polyps and ovarian changes. Endometrial parameters such as thickness of endometrium, phasing, appearance of glands in given area and stromal changes were studied. Formalin fixed hysterectomy specimens were cut, sectioned, and at 3-4 um section were taken. Hematoxylin and eosin stain was applied, if required, additional sections were taken and examined .Other relevant details such as clinical symptoms, menstrual and reproductive factors and history of contraceptive use was also included. Ethical approval was taken from institutional ethical committee.

Table 2: Various clinical complaints of patients diagnosed with leiomyoma

Clinical symptom	Number	Percentage
Menorrhagia	266	(60.86 %)
Metrorrhagia	80	(18.30%)
Polymenorrhagia	54	(11.41%)
Dysmenorrhea	197	(45.08%)
Abdominal mass	175	(40.04%)
Abdominal and Pelvic pain	132	(30.20%)
Miscellaneous	46	(10.52%)

RESULTS

A total of 437 patients were included in the study. The common age group among these histopathologically diagnosed leiomyoma uteri was 31-40 years (42.10 %; Table 1). Menorrhagia (60.86%) was the prime clinical symptom followed by dysmenorrhea (45.08 %) with abdominal mass (40.04%), abdominal and pelvic pain (30.20%) and polymenorrhea (11.41%). (Table2) Among endometrium pathologies and changes, proliferative phase was more (48.51%), followed by secretory phase (29.46%), endometrial hyperplasia (5.03%), atrophy (14.18%), decidual reaction (0.22%), endometrial polyp (1.83%) and adenomyosis (15.10%). (Table 3) Secondary degenerative changes were (32.03%) of which hyaline degeneration was (15.33%). Detail secondary changes in leiomyoma are mentioned in table 4. Common ovarian pathologies were simple serous cyst (6.40 %), corpous luteal cyst (4.34 %) , follicular cyst (0.91%), chocolate cyst (0.91%), dermoid cyst (0.45%), hemorrhagic cyst (0.22%), serous cystadenoma (0.22%) , fibroma (0.22%) and small cell neuroendocrine tumor (0.22%) (Table 5).

DISCUSSION

Leiomyomas are commonest smooth muscle tumors in female genital. These benign tumors occur in 20–40% female of reproductive age group.[5] They are steroid dependent tumors. They are typically found during the middle and late reproductive years. Fibroid have not been described in prepubertal girls. In present study maximum no. of cases was seen in 31-40 years (42.10%) age group which was consistent with other international revealing that uterine fibroid being more common in third and fourth decade of life.[6] Reason for that is fibroid are oestrogen dependent thus their usual age distribution is from menarche to menopause.

The symptoms specifically to uterine fibroids are somewhat problematic because of variable clinical presentation and often asymptomatic nature. The symptoms and severity usually depends on size, position, and number of leiomyoma present because symptomatic leiomyomas need urgent attention. Patients with leiomyoma clinically present with dysfunctional uterine bleeding predominantly menorrhagia and pelvic pain. Several studies showed that uterine fibroids

Table 3: Endometrial , myometrial changes and pathologies with leiomyoma

Endometri-um and Pathologies / changes	20 years and below	21-30 years	31- 40 years	41-50 years	51-60	61-70	71 years and above	Total
Proliferative phase	0	13(7.73%)	78 (46.42%	71(42.26%)	5(2.97%)	1(0.59%)	0	168 (48.51%)
Secreatory phase	0	5(4.85%)	52 (50.48%)	41(39.80%)	5 (4.85%)	0	0	103 (29.46%)
Endometrial hyperplasia	0	4(18.18%)	3(13.63%)	14(63.63)	1(4.54%)	0	0	22 (5.03%)
Atrophy	0	4(6.45%)	6(9.67%)	14(22.58%)	9(12.90%)	2(3.22%)	0	35(8.00%)
Endometritis	0	0	4(40%)	6(60%)	0	0	0	10 (2.28%)
Decidua	0	0	1(100%)	0	0	0	0	1(0.22%)
Endometrial polyp	0	1(12.5%)	3(37.5%)	3(37.5%)	1(12.5%)	0	0	8(1.83%)
Myometrium Pathology								
Adenomyosis	0	7(10.60%)	27(40.90%)	26(39.39%)	5(7.57%)	0	1(1.51%)	66 (15.10%)

Table: 4 Secondary changes in leiomyoma

Secondary changes in leiomyoma	Number	Percentage
Hyline Degeneration	67	(15.33%)
Mucoid Degeneration	34	(7.78%)
Cystic Changes	25	(5.72%)
Fatty Changes	10	(2.28 %)
Red Degeneration	4	(0.91%)
Total	140	(32.03%)

are commonly identified in women who have menorrhagia, pelvic pain, obstructive symptoms , infertility or recurrent pregnancy loss.[7]

Menorrhagia may be due to increased vascularity, increased size of endometrium cavity, altered uterine contractility, increased bleeding surface area, associated endometrial hyperplasia compression of vein by tumor with dilation and engorgement of venous plexus in endometrium and myometrium.[8]

Menorrhagia was (60.86%) chief clinical complaint whereas pain was (30.20%) which may occur due to pressure effects and degenerative changes. Other least common clinical complaints were painful sexual intercourse, urinary frequency and urgency aggregating (10.52%) which may be due to pressure effect.

Endometrium is a tissue which shows structural reorganization with each menstrual cycle in preparation for implantation, in the absence of which superficial layer is partially or completely shed and remodelled in preparation for next cycle. Estrogen and progesterone are hormones required for implantation and maintaining the integrity. Proliferative phase endometrium and secretory phase was accounting (48.51%) and (29.46 %) respectively. whereas Mannen C et al[9] diagnosed proliferative (33%) and secretory (29%) phase respectively in their study. The pathogenesis is unexplained. Estrogen stimulation may be important etiological factor. Khan JS[10] showed proliferative phase and endometrial hyperplasia both represent estrogen phase and occur due to hyperestrogenic state. Endometrial hyperplasia was aggregating (5.03%). Endometrial polyp may develop in association with endometrial hyperplasia and is also oestrogen dependent. In the present study endometrial polyp comprised 1.83 %.

Atrophy was accounting (14.18%). It may occur due to mechanical pressure exerted by the nodular mass of the leiomyoma on the overlying or nearby endometrium and also from perimenopausal hormonal insufficiency. Adenomyosis is a myometrial lesion which is characterized by the presence of ectopic endometrial tissue in between fascicles of the myometrium. Coexisting pathologies such as leiomyomata, endometriosis, endometrial hyperplasia, endometrial polyp and endometrial carcinoma are commonly seen with adenomyosis which occurs due to unopposed estrogen.[11] It was diagnosed in (15.10%) with leiomyoma.

The secondary or degenerative changes in leiomyoma occur due to inadequate blood supply and interference with the capsular circulation.[12] Secondary changes in leiomyoma are hyaline , mucoid, cystic, fatty , red, calcification.[13] Fat cells, skeletal muscle and cartilage have been identified in leiomyoma. Cystic degeneration is the end result of hyaline degeneration. In present hyaline degeneration was a commonly (15.33%) encountered secondary change, Similar results were seen by Persaud et al[14] who also diagnosed hyaline degeneration as a major degeneration in his study. Leiomyoma undergo secondary changes so also adjacent tissue due to estrogenic stimulation. Secondary changes seen in leomyoma was found more with proliferative phase (42.1%) which also signify that hyper estrogen state maybe the causative factor. Red degeneration occurs predominantly during pregnancy[15] because of hormonal influence. We also diagnosed red degeneration (0.91 %) in leiomyoma along with pregnancy.

Ovarian pathologies are seen with leiomyoma in 13.72 % of total cases. Simple serous cyst was the most common ovarian pathology (6.40%). It is commonly and possibly

Table 5: Ovarian pathologies in patients with leiomyoma

Ovarian pathology	20 years and below	21-30 years	31-40 years	41-50 years	51-60 years	61-70 years	71 years and above	Total
Simple serous cyst	0	1(3.57%)	8(28.57%)	17(60.71%)	2(7.14%)	0	0	28 (6.40%)
Corpous leutial cyst	0	1(5.26%)	10 (52.63%)	7(36.84%)	1(5.26%)	0	0	19(4.34%)
Follicular cyst	0	0	1(25%)	3(75%)	0	0	0	4 (0.91%)
Chocolate cyst	0	3(75%)	1(25%)	0	0	0	0	4(0.91%)
Dermoid cyst	0	0	0	2 (100%)	0	0	0	2(0.45%)
Serous cyst adenoma	0	0	1	0	0	0	0	1(0.22%)
Fibroma	0	0	0	1	0	0	0	1(0.22%)
Small cell neuro endo crine tumor	0	0	0	1	0	0	0	1(0.22%)
Total								**60 (13.72%)**

significantly association with leiomyoma are follicular cyst of ovary, endometrial hyperplasia, endometrial carcinoma and endometriosis.[11] Follicular cyst and leiomyoma have equal incidence.[16] In present study similar results were not seen because follicular cyst was found (0.91%) in association with Leiomyoma . In this study chocolate cyst of ovary was seen in 0.91 % of cases. In endometriosis as a result of repeated hemorrhages, ovary is converted into a chocolate cyst which again shows a strong association with hyper estrogenic state.[12]

CONCLUSION

Leiomyoma is common pathology seen predominantly in late reproductive and perimenopausal women which clinically present with menorrhagia. Proliferative phase, secretory phase, endometrial hyperplasia were common endometrial changes and pathologies seen with leiomyoma whereas in myometrium adenomyosis was also frequent. Leiomyomas undergo secondary changes due to estrogenic stimulation. Simple serous cyst was common ovarian pathology but follicular cyst, chocolate cyst was also encountered which again signifies a strong association of leiomyoma with hyper estrogenic state.

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