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Diagnostic Dilemnas in Leiomyomas: Case Series of Leiomyoma Variants and Degenerations in A Tertiary Care Center

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Abstract

Uterine leiomyomas are the most common neoplasms seen in the female genital tract. Leiomyomas are benign mesenchymal tumors composed of intersecting fascicles of benign smooth muscle cells giving a whorling pattern on the gross. As the leiomyomas enlarge, they outgrow their blood supply resulting in various degenerative changes such as hyaline, cystic, myxoid or red degeneration and calcification. Although the usual leiomyomas can be readily diagnosed on the ultrasonography, the degenerative changes often lead to varied appearances in the radiology and are not easily picked up. They often mimic other conditions, most worrisome being malignancy. Often, these leiomyomas are thought to be neoplastic pre operatively leading to substantial conundrum for the patients and the surgeons alike. Intraoperative histopathological consultation is often sought for suspected tumors which later turn out to be benign leiomyomas with secondary degenerative changes. Leiomyoma variants like atypical leiomyoma, cellular leiomyoma, mitotically active leiomyoma are the other end of the spectrum where though the radiology and gross findings arise no suspicion, microscopy often becomes worrisome for features of leiomyosarcoma. Extensive sectioning is essential to rule out the other features of leiomyosarcoma. These variants are associated with variable rates of recurrence and progression to sarcoma. Therefore, it is imperative to diagnose them correctly. Here, we report few such cases showing degenerative changes and the various variants of leiomyomas which caused diagnostic difficulties. This case series aims to create awareness about such conditions and underlines the importance of careful gross examination, adequate sectioning and microscopic examination which helps to resolve the dilemmas.

Keywords: Leiomyoma, degenerative changes, cellular, mitotically active, symplasmic, lipoleiomyoma, schwannoma like.

Introduction

Leiomyomas are benign mesenchymal tumors derived from the smooth muscle cells with a wide range of morphological patterns. Leiomyomas are the most common gynecological neoplasms. The subtypes account for approximately 10% of leiomyomas.[1] The unusual appearances of the leiomyomas can be classified into three categories: Degeneration and other histopathologic findings, specific types of unusual leiomyomas and unusual growth patterns. Common

types of degenerations are hyaline, myxoid, cystic and red. Edema, hemorrhage, necrosis and calcification can also be observed. Other subtypes of leiomyomas are lipoleiomyoma, myxoid leiomyoma, hydropic leiomyoma, apoplectic leiomyoma and epithelioid leiomyoma. Intravenous leiomyomatosis, metastasizing leiomyoma, diffuse leiomyomatosis, and peritoneal disseminated leiomyomatosis represent unusual growth patterns. Cellular leiomyoma, atypical leiomyoma and mitotically active leiomyomas are the leiomyoma variants. These tumors have some characteristics of leiomyosarcoma but not all the characteristics together. USG is the primary modality for diagnosing uterine fibroids. However, degenerative changes may result in heterogeneous or unusual presentations that may lead to diagnostic dilemma.[2] The variants of leiomyoma have similar symptoms and radiologically difficult to differentiate. Pathological examination of the fibroids is the only way to solve the dilemmas caused by the various subtypes and variants. Awareness of the various gross and microscopy features of the different types of leiomyomas is necessary to prevent under or overdiagnosis. In this study we report few cases of the various variants of leiomyoma and the degenerative changes which posed certain diagnostic challenges.

Cases:

Case 1:

A 45-year-old female presented with complaints of menorrhagia for 6 months. USG reported a large cystic mass in the left ovary. Her CA 125 levels were mildly raised (79.06 U/ml). CEA, AFP, B-HCG levels were within normal limit. She underwent total hysterectomy with bilateral salpingo opherectomy. Grossly, uterus with cervix measured 9.5x4x3 cm. There was a large cystic mass attached to it on the left side measuring 35x35x30 cm. External surface was smooth and congested. There was no evidence of rupture. On opening, it was filled with yellowish coloured mucoid fluid. It was multiloculated with solid areas. It was thought to be an ovarian mass. On careful examination tube and ovary of the left side were identified stretched over the mass. Right ovary measured 4.5 x2x 1 cm and the right fallopian tube measured 7 cm in length. The endometrium was polypoidal and endo myometrium measured 2 cm. Cervical length was 3.5 cm.

Microscopy: Multiple sections from the mass revealed spindle cells arranged in fascicles with extensive oedema and cystic change. There was no evidence of atypia or pleomorphism. There was no evidence of increase in mitosis or necrosis. So, after extensive sampling and careful re-examination of the gross specimen, it was diagnosed to be a broad ligament leiomyoma with extensive cystic change.

Case 2:

A 33-year-old female presented with complaints of menorrhagia. USG was suggestive of multiple uterine fibroids. She underwent total laparoscopic hysterectomy.

Gross: Received uterus with cervix measuring 9x7x5 cm. Cervical length was 3 cm. Endo myometrial thickness was 3 cm. There were multiple intramural fibroids ranging in size from 1cm to 3 cm in diameter. Also received bilateral fallopian tubes measuring 4cm and 5 cm in length respectively.

Microscopy: Sections from largest fibroid showed focal nuclear atypia. Extensive sampling was required and multiple sections were studied. However, there was no evidence of abnormal mitosis or necrosis. Thus, leiomyosarcoma was ruled out and it was diagnosed to be Symplasmic leiomyoma. (Fig.2)

Case 3:

42-year-old female came with complaints of menorrhagia. USG showed an enlarged uterus with a moderately large submucosal fibroid completely occupying the endometrial cavity with moderate vascularity on colour doppler. The endometrial lining and myometrium were thinned out due to the distended endometrial cavity. Patient underwent total abdominal hysterectomy with bilateral salpingectomy.

Gross: Received uterus with cervix measuring 17x16x8 cm. Cervical length was 3 cm. There was a large intramural fibroid measuring 11x9 cm displacing the endometrial cavity. Endometrium was 0.5 cm thick and oedematous. Cut section of fibroid was grey white with whorling. Also received bilateral fallopian tubes measuring 2.5 cm and 3.5 cm in length respectively.

Microscopy: Endometrium was lined by basal layer. Myometrium showed intramural leiomyoma with hyaline change and increased mitotic activity focally. Mitotic count ranged from 2-8/10 hpf. Multiple sections were taken thereafter. However, there was no evidence nuclear atypia and tumor necrosis. Hence, it was labelled to be mitotically active leiomyoma. (Fig. 3)

Case 4:

51-year-old female presented with complaints of pain in abdomen. USG showed a large heterogeneous posterior wall fibroid displacing the endometrial cavity anteriorly and caused enlargement of the uterus. She underwent myomectomy.

Gross: We received well circumscribed whitish firm mass measuring 11x9x5 cm. Cut section grey white with whorling.

Microscopy: Sections showed smooth muscle bundles arranged in fascicular pattern. Some areas were highly cellular and also showed foci of hydropic degeneration. Variable lymphocytes and mast cells also were noted.

However, there was no evidence of atypia/ coagulative necrosis or increased mitosis.
It was diagnosed as Cellular leiomyoma with hydropic degeneration. (Fig. 4)

Case 5:

A 29-year-old female underwent myomectomy.
Gross: Received globular mass measuring 6x5.5x5 cm. Cut section greyish white with whorled appearance with areas of hemorrhage. Multiple sections were taken.
Microscopy: Multiple sections studied showed a well-defined tumor composed of fascicles of spindle cells intersecting each other. At places hyaline change and hemorrhage was noted. Some of the nodules were cellular and showed vaguely formed tubules resembling sex cord. There was no evidence of increased/ atypical mitosis, pleomorphism or necrosis. Final diagnosis was given as cellular leiomyoma and IHC was advised.

Case 6:

59 year old female came with complaints of abdominal pain. USG reported a large well defined hyperechoic soft tissue mass noted in the endometrial cavity with no significant vascularity within. Suspected to be of neoplastic etiology. She underwent exploratory laparotomy with total abdominal hysterectomy with bilateral salpingo opherectomy.
Gross: We received already cut opened uterus with cervix with bilateral adnexa measuring 12x8x5 cm. Also received already cut opened attached mass measuring 8 cm in diameter. Cut section was yellowish greasy in appearance. Right sided fallopian tube measured 3cm in length. Right ovary measured 1.5x1x1 cm. Left sided fallopian tube measured 4 cm in length and left ovary measured2.5x1x1 cm. It was thought to be lipoma but the location was unusual. Multiple sections were taken.
Microscopy: Myometrium showed a well circumscribed neoplasm composed of bundles of smooth muscle with extensive fatty change and hyalinisation. There was no evidence of increase in mitosis and necrosis. It was thus diagnosed to be leiomyoma with fatty change. (Fig. 5)

Case 7:

50-year-old female presented with complaints of pain in abdomen. USG reported a large hyperechoic intramural fibroid possibly a leiomyolipoma. Patient underwent total abdominal hysterectomy.
On gross: Uterus with cervix with bilateral adnexa was received measuring 12x9x6 cm. On opening a large intramural well circumscribed mass was seen measuring 7.5 cm in diameter. It appeared yellow in colour. Whorling was not seen. Both ovaries measured 2x2x1 cm and both the tubes measured 5 cm in length. Though the radiology mentioned fibroid, the gross appearance was not that of leiomyoma. Hence, multiple sections were taken.
Microscopy: Myometrium showed well circumscribed neoplasm composed of fascicles of benign smooth muscle separated by adipose tissue. Hyaline change was also noted. It was reported as leiomyoma with fatty change (lipoleiomyoma) (Fig. 6)

Case 8:

50 year old female had complaints of PV bleeding and an abdominal lump. C.T scan revealed an enlarged uterus (18.3x15.3x14.8 cm) with lobulated contour. A large non enhancing hypodense soft tissue mass was seen at the posterior wall (to the left). Two other smaller heterogeneously enhancing masses were also seen at the fundus and at the anterior wall (to the right). She underwent exploratory laparotomy with bilateral salpingo opherectomy with hysterectomy and the mass was sent was frozen section as malignancy was suspected.
Gross: Received uterus with cervix measuring 24x22x12 cm with bilateral adnexa. There was a large cystic mass attached measuring 9.5x8 cm. Cut section revealed serous fluid within the cystic mass. It was thought to be an ovarian mass. There were multiple fibroids in the uterus ranging from 3 cm to 8 cm in diameter. Multiple sections were taken from the cystic mass. One of the fibroids revealed hemorrhagic congested and tan cut surface.
Microscopy: Sections from the cystic mass revealed extensive areas of hyalinisation, coagulative necrosis and cholesterol clefts along with fascicles of benign spindle cells. Sections from the other fibroid showed congested vessels and coagulative necrosis. There was no evidence of atypia or mitosis in the multiple sections studied. So, the larger mass was diagnosed to be leiomyoma with cystic change (Fig. 7) and the fibroid showed changed of red degeneration.

Case 9:

65-year-old postmenopausal female presented with complaints of pain in abdomen. USG reported: a large heterogeneous solid mass in right pouch of douglas; may represent a broad ligament fibroid or a solid ovarian tumor. She underwent exploratory laparotomy followed by total abdominal hysterectomy with bilateral salpingoopherectomy. The broad ligament fibroid was sent for frozen section for confirmation.
Gross: Received circumscribed mass measuring 8x7x4 cm for frozen. Cut section was reddish and tan. A grey white nodule of 1.5x1.6 cm was noted. This was thought to be an ovarian neoplasm with the nodule representing a deposit on the mass. Subsequently the uterus with cervix was received measuring 6x2x1.5 cm. Uterus was atrophic. One ovary measured 1x1.5x0.3 cm, unremarkable. The other ovary measured 1x0.8x0.4 cm, unremarkable. One fallopian tube measured 1.5 cm in

length, unremarkable. The other tube measured 2cm in length. It showed a small nodule measuring 1.5x1x0.5 cm. The presence of another nodule on the fallopian tube enhanced the suspicion of malignancy with multiple deposits. Multiple sections were taken.

Microscopy: Sections showed senile cystic atrophy of endometrium, adenomyosis and chronic cervicitis. Multiple sections from the large mass showed features of leiomyoma with extensive areas of coagulative necrosis. Congested vessels were also seen. It was diagnosed as leiomyoma with red degeneration. (Fig. 8) Section from the fallopian tube nodule showed adenomyoma on the serosa of the tube.

Case 10:

A 45 year old female presented with complains of pain in abdomen and menorrhagia. USG revealed a large intramural fibroid. She underwent a hysterectomy and the sample was sent for histopathological examination.

Gross: Received uterus with cervix measuring 17x9x4 cm. A well circumscribed mass was seen intramurally measuring 7 cm in diameter. Cut section was grey white and vague whorling was appreciated. It was thought to be an intramural fibroid and representative sections were taken.

Microscopy: The sections from the intramural mass showed tumor composed of benign spindle cells showing nuclear palisading resembling verocay bodies (Fig.9). This made us suspect Schwannoma. However, extensive sampling helped us identify the intersecting fascicles and the cigar shaped nuclei of leiomyoma. Thus, corelating the gross and the microscopy, it was diagnosed as Schwannoma like leiomyoma.

Discussion

Uterine leiomyomas are the most common gynaecologic neoplasms. Uterine leiomyomata can undergo degeneration, which is detectable in approximately 65% of cases. As leiomyomas enlarge, they can outgrow their blood supply, resulting in different types of degeneration, such as hyaline, cystic, myxoid or red degeneration and calcification. Hyaline degeneration is the most common type of degeneration, accounting for 60% of cases. Myxoid degeneration is observed in 19% of leiomyomas, calcification in 8%, cystic in 4%, fatty metamorphosis in 3%, and red degeneration in 3%. Leiomyomas with degeneration show similar symptoms to non-degenerated leiomyomas except acute onset of abdominal pain, which is unusual. A degenerating uterine leiomyoma is often misdiagnosed. Typical appearances of leiomyomas are easily recognized on imaging. However, the atypical appearances that follow degenerative changes can cause confusion in diagnosis. Leiomyomas have been misdiagnosed as adenomyosis, hematometra, uterine sarcoma and ovarian masses.

Leiomyoma variants have similar symptoms and findings in the pelvic examinations of patients with ordinary leiomyoma (OL) and leiomyosarcoma (LMS). Immunohistochemistry, molecular-genetic analysis, and imaging techniques have a limited benefit for the differential diagnosis of these uterine mesenchymal tumors. Magnetic resonance imaging (MRI), positron emission tomography and computed tomography have a limited utility to differentiate leiomyoma variants from OL and LMS. Thorough histopathological examination is necessary for accurately diagnosing these variants.

In our case 1, an ovarian malignancy was suspected on radiology probably due to the location and the enormous size of the lesion. However, gross and microscopic examination confirmed it to be a giant broad ligament fibroid. Giant fibroids are known to arise usually from the uterus but also rarely from the broad ligament. Among the extrauterine fibroids, broad ligament fibroids are the most common to occur although its overall incidence is rare. Extrauterine fibroids develop due to existence of smooth muscle at other sites, broad ligament being the most common site. Fibroids in the broad ligament though not so common, are known to achieve enormous size; which may mimic a malignancy of the pelvis thereby altering the course of treatment offered. It is always challenging to diagnose a broad ligament fibroid preoperatively. Transvaginal ultrasound, CT, and MRI are helpful but they are often confused to be an ovarian mass. Surgical management of broad ligament fibroids is also challenging and may be associated with complications like hemorrhage and ureteric injuries. Other case reports in literature like those by Gowri et al, Mandhane et al and Gupta et al have also highlighted the diagnostic dilemma posed by a broad ligament fibroid. Often preoperatively an ovarian malignancy is suspected which poses the need for frozen section diagnosis. Careful gross examination and microscopy is the only confirmatory diagnostic tool.

Cases 2,3,4,5 discuss the various variants of leiomyoma. Uterine smooth muscle tumors (USMTs) constitute a group of histological, genetic, and clinically heterogeneous tumors that include at least six major histologically defined tumor types, including usual uterine leiomyomas, mitotically active leiomyoma, cellular leiomyoma, atypical leiomyoma (ALM), smooth uterine muscle of uncertain malignant potential (STUMP), and leiomyosarcoma (LMS). Uterine leiomyomas are benign lesions and leiomyosarcomas are overtly malignant. However, the nature of the uterine variants i.e. mitotically active leiomyoma, cellular leiomyoma, ALM, and STUMP is not well defined.

Leiomyoma with bizarre nuclei/ atypical leiomyoma/ symplasmic leiomyoma has been defined in WHO as bizarre cells in a background of typical leiomyoma. The mitotic count in such cases is typically low, less than 5/10 hpf of 0.55 mm diameter. Atypical leiomyomas share many molecular alterations with leiomyosarcoma. It is possibly a precursor lesion of leiomyosarcoma or it is considered to have similar genetic changes during its early stages. Some studies have reported both intra-abdominal recurrence and distant metastasis to lungs, but no prospective series are available, probably due to the rarity of the diagnosis, although the actual incidence is undetermined. No pelvic imaging modality can reliably diagnose atypical leiomyoma. Although ultrasonography is the most frequently used modality to diagnose usual leiomyomas, it is limited to precisely differentiate the type of solid myometrial masses. Degenerative changes in the leiomyoma can cause atypical imaging features. The morphologic, signal intensity, and contrast enhancement patterns of these ALMs can overlap those of LMS on magnetic resonance imaging, making it more difficult to reach an accurate differential diagnosis. Moreover, there are no sensitive imaging studies that can diagnose ALM before surgery. Extensive sampling and microscopic examination can only definitely diagnose atypical leiomyoma.

Mitotically active leiomyomas have a mitotic count of 6-14 mitoses/ 10 hpf of 0.55 mm diameter. Cellularity may be increased but there is no cytological atypia or tumor cell necrosis. Extensive sampling is again very important in these tumors.

Cellular leiomyomas show significantly increased cellularity compared to surrounding myometrium often with crowding and overlapping of nuclei. The presenting symptoms are similar to those of patients with usual leiomyomas. Microscopically, cellular leiomyomas show tumor composed of cells arranged in a diffuse pattern and the border of the lesion is usually irregular and merges with the surrounding myometrium. Cells have scant cytoplasm and oval-to-spindle nuclei and arranged in a fascicular pattern. Thick walled vessels and cleft like spaces are common. Tumor cells lack atypia, mitoses are rare and tumor cell necrosis is not seen. This helps in differentiating this variant from its closest differential, i.e. leiomyosarcoma.

In case 5 of our study, the tumor showed fascicles of smooth muscle cells intersecting each other. This was a cellular tumor and at places there was formation of vague tubules giving a resemblance to endometrial stromal tumor. It has also been reported in literature that differentiation between highly cellular leiomyomas and low grade endometrial stromal sarcoma may pose diagnostic challenge. The latter usually have small arterioles encircled by fusiform tumor cells, absence of thick-walled blood vessels, and sharply circumscribed margins. Use of a panel of immunohistochemical stains, such as h-caldesmon, desmin, and CD10, can usually distinguish between the 2 conditions. Highly cellular leiomyomas (HCLs) usually express h-caldesmon and desmin, whereas endometrial stromal tumors express CD10. [10] It is important to differentiate between cellular leiomyomas and endometrial stromal sarcomas as the clinical course and the management differs. A highly cellular leiomyoma follows a benign course usually while endometrial stromal tumors, especially endometrial stromal sarcoma (ESS) can behave aggressively. ESSs respond to antiestrogen therapy as they are usually ER positive. This would be useful, especially in metastatic or extrauterine while for cellular leiomyoma, myomectomy will suffice. There have been reports of recurrence of mitotically active leiomyomas as leiomyosarcomas. Also, metastasis of cellular leiomyoma to rib and vertebrae after 3 years of myomectomy, pulmonary metastasis of cellular leiomyoma 10 years of hysterectomy has been reported.

Whether leiomyoma variants differ from one another in terms of clinical characteristics and behaviour patterns is also unclear. Awareness of these variants, thorough sampling and histopathological examination is required for definitive diagnosis. More prospective studies with a larger series and longer follow up periods are needed to determine the clinical behaviour of these variants.

Lipoleiomyomas are rare, benign tumors composed of mature adipocytes intermixed with smooth muscle cells. Uterine lipoleiomyomas are uncommon variants of leiomyomas that are often found incidentally. They reportedly constitute 0.03-0.2% of all uterine leiomyomas. Though they are benign, there are reports in the literature of these lesions coexisting with other gynecological malignancies, as well as with various metabolic diseases and abnormal estrogen statuses. They are generally incidentally found in post-menopausal females. They do not require surgical intervention, unless symptomatic, and must be differentiated from lesions that need excision.

The differentials for lipomatous tumors of uterus are benign lipomas, lipoleiomyomas, angiomyolipomas, fibrolipomas and liposarcomas. Differentials for lipid containing pelvic tumors are benign ovarian teratoma, benign pelvic lipoma, fatty lymphadenopathy, degeneration of leiomyoma, retroperitoneal cystic hamartoma, and well-differentiated liposarcoma. Among the differentials, the most common one is benign cystic ovarian teratoma, which requires surgical excision. Imaging by USG commonly shows a well-defined hyperechoic mass surrounded by a hypoechoic rim,

which may suggest a strip of myometrium around the fatty component. Vascularity is often poor. However, ultrasound is not always able to definitively show the location of the lesion. In contrast to sonography, CT can more definitively show the uterine origin of the mass demonstrated by the claw sign representing the rim of myometrium surrounding the fatty tumor. CT usually shows a well-marginated, dense mass with predominantly fatty component. MRI is the imaging modality of choice and shows a well-circumcised mass which is hyperintense on T1 with a peripheral hypointense rim. It also appears hyperintense on T2.

In our study, both cases of lipoleiomyomas were in postmenopausal females. In one case, it was reported to be a neoplastic lesion in the endometrium. However, further correlation with CT/ MRI was not done and patient underwent hysterectomy. In the other case it was accurately diagnosed as lipoleiomyoma on USG. On gross, both the tumors did not resemble the usual uterine leiomyomas. They were yellow and greasy and whorling was not appreciated. However, studying multiple sections revealed the mature adipocytes admixed with the benign smooth muscle cells.

Red degeneration is another degenerative change often encountered in practice. It is hemorrhagic infarction of the uterine leiomyoma. It occurs in 8% of leiomyomas complicating pregnancy, although the prevalence is around 3% of all uterine leiomyoma. Red degeneration is thought to be caused due to venous obstruction at the periphery of the lesion which leads to hemorrhagic infarction and extensive necrosis that involves the entire lesion. On gross pathology, it is characterized by a red (hemorrhagic) appearance which can be alarming. Microscopy shows extensive coagulative necrosis without inflammatory cell infiltrate or hemorrhage throughout the entire lesion. Also lacks hemosiderin, granulation and fibrosis. The typical gross appearance of beefy red uterus may not always be seen especially in cases with chronic changes. In such cases, grossly an entirely homogeneous pink tan cut surface is seen as found in necrosis. Such gross appearance may arise a suspicion of malignancy. Therefore, preoperative diagnosis by MRI is important as MRI is the only imaging modality that can detect red degeneration.

Cystic degeneration is seen in about 4% of leiomyomas. It may be considered as an extreme sequela of oedema. Though USG is the most commonly used primary imaging modality of for diagnosis of leiomyoma, the degenerative changes can cause heterogeneity or unusual appearance leading to diagnostic confusion. Predominantly cystic nature of the mass can lead to a presumptive diagnosis of primary epithelial ovarian neoplasm. The large size of the lesion and multi locularity are features typical of a mucinous epithelial subtype. In the given case to a suspicion of ovarian neoplasm was raised and frozen diagnosis was asked for. The internal septations separating the cystic spaces represent interlacing fascicles of smooth muscle amidst marked oedema. [17] Multiple sections revealed cystic degeneration in a leiomyoma and no ovarian neoplasm was found. Thorough histopathological examination is the only confirmatory way to correctly diagnose and avoid overtreatment.

In our case10, the tumor showed many areas showing nuclear palisading and verocay bodies. This made us suspect a Schwannoma. However, uterine schwannomas are rare and have been reported in the uterine cervix, not in the uterine corpus. Also, extensive sampling helped us identify the typical features of leiomyoma in the surrounding areas. A typical histologic feature of the usual type of uterine leiomyoma is intersecting fascicles of bland spindle cells with cigar shaped nuclei. Nuclear palisading of the spindle cells and verocay bodies are characteristic findings of schwannoma. The 2020 WHO textbook described that nuclear palisading may be included in the histologic features of uterine leiomyomas. However, uterine leiomyomas showing predominantly nuclear palisading simulating verocay bodies have been rarely reported. The pathogenesis of nuclear palisading in uterine leiomyoma has been unknown. Although the clinical significance of this rare uterine tumor has not yet been reported, this tumor might be related to the HLRCC syndrome. Further studies are required to examine whether patients with schwannoma-like/neurilemmoma like uterine leiomyomas are more likely to be associated with HLRCC syndrome than those with usual-type uterine leiomyoma. [18]

Figure 1: Large broad ligament fibroid with cystic degeneration

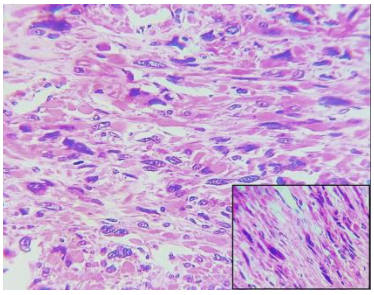

Figure 2: Symplasmic leiomyoma. Cellular atypia in a leiomyoma (40x, H&E)

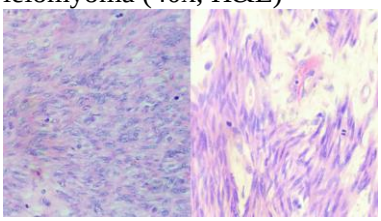

Figure 3: Mitotically active leiomyoma. Mitosis shown by arrows (40x, H&E)

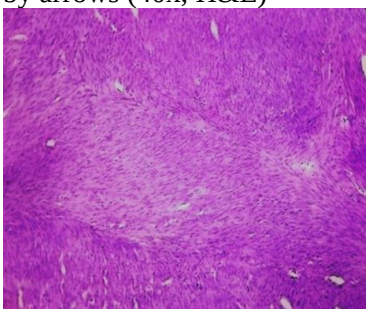

Figure 4: Cellular leiomyoma. Leiomyoma showing increased cellularity. (40x, H&E)

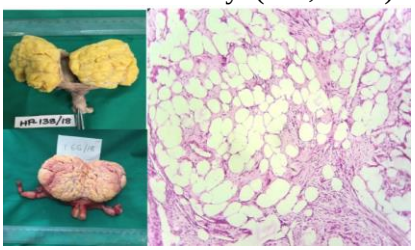

Figure 5, 6: Lipoleiomyoma. A. Gross appearance. B. Adipocytes admixed with smooth muscle. (40x, H&E)

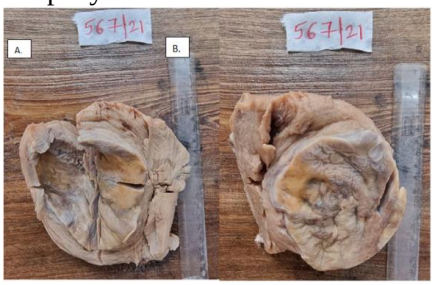

Figure 7: Leiomyoma with cystic degeneration

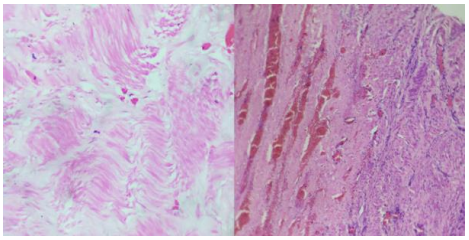

Figure 8: Red degeneration. Areas of coagulative necrosis and congested vessels (40x, H&E)

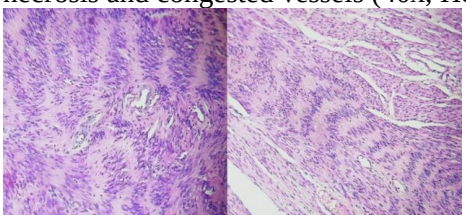

Figure 9: Schwannoma like leiomyoma. Verrocay body like areas (40x, H&E)

Conclusion

Degeneration in leiomyoma, variants of leiomyoma and giant leiomyomas often cause diagnostic challenges pre and post operatively. Routine imaging by USG does not pick up the degenerative changes or the variants and often leads to suspicion of malignancy. Thorough examination of the gross specimens and extensive sectioning and microscopic examination helps to resolve the difficulties and arriving at an accurate diagnosis.

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