Original Article

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Vascular Tumours of the Female Genital Tract: A Clinicopathologic Study of 11 Cases

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Introduction: Vascular tumours of the female genital tract (FGT) are very rare. The aim of this study was to analyze the distribution of vascular tumours in FGT and to correlate their clinicopathological features.

Materials and Methods: In a retrospective study of ten years, clinical features including imaging studies, gross and microscopic features of eleven cases of benign vascular tumours of FGT were reviewed. The age range in the present study was 22 to 95 yrs. The presenting complaint was abdominal pain/mass, postcoital bleeding, vaginal and vulval mass. The duration of symptoms varied from 3 months to 10 yrs. A diagnosis of vascular tumour was not considered in any of these on clinical grounds.

Results: The vascular tumours occurred most commonly in ovary (five), followed by vulva (three), and one each in cervix, vagina and placenta. Clinical diagnoses ranged from cystadenoma in ovaries to endocervical polyp in cervix, Bartholin's cyst in vulva and carcinoma in vagina. Histologically all were benign vascular neoplasms, ranging from hemangioma (five), lymphangioma (two), lymphangioma circumscriptum (one) and chorangioma (one). Two recently described very rare vulval soft tissue tumours angiomyofibroblastoma (one) and aggressive angiomyxoma of the vulva (one) were also encountered.

Conclusions: Thus we conclude that benign vascular tumours in the FGT can present with symptoms similar to gynaecological tumours & epithelial malignancies and may lead to unwarranted radical surgery. Pathological examination is necessary in all such cases to exclude the possibility of malignancy. Angiomyofibroblastoma and aggressive angiomyxoma of the vulva are very rare and both shared similar clinical and histopathologic features causing diagnostic problems.

Key Words: Female genital tract, Vascular tumours, Haemangioma, Lymphangioma, Angiomyofibroblastoma, Aggressive angiomyxoma, chorangioma, Lymphangioma circumscriptum

INTRODUCTION

Vascular tumours are rarely found in the female genital tract (FGT). The ovaries have a rich vascular supply and the rarity of vascular tumours in the ovary is therefore surprising [1]. It has been postulated that the rarity of this tumour is due to the cyclic changes that the ovary undergoes during the reproductive years [2]. Most of the vascular tumours are incidental findings due to their small size and asymptomatic nature [3,4].However, large lesions are present clinically, with features mimicking the common gynaecological tumours, even on ultra-sonographic examination. Most of the literature contains the short series of these tumours which are confined to one organ of the FGT [1, 3, 4]. The objective of the present study was to describe the clinical profile and the pathological features of eleven cases of benign vascular tumours of the FGT.

MATERIALS AND METHODS

All the cases which were diagnosed as having vascular tumour of the FGT in the Department of Obstetrics and Gynaecology and Pathology during a period of ten years from 2000–2009, were retrieved. The clinical features, the imaging studies and the gross findings were analyzed and the microscopic slides were reviewed for the histopathological features.

RESULTS

The clinical features and the physical examination findings are presented in [Table/Fig-1]. The ages of the patients ranged from 22 to 95 years (the mean was 45.5 years). The duration of the symptoms varied between three months to ten years. Five patients had tumours in the ovary (three left, one right, one bilateral), four in the vulva and one each in the cervix and the vagina [Table/Fig-2]. These cases presented with non-specific symptoms which ranged from abdominal masses and/or pain, post coital bleeding and vaginal and vulval masses. A diagnosis of vascular tumour was not considered in any of these cases on clinical grounds.

The clinical differential diagnosis in the present series included tubo-ovarian masses (cases1, 2, 10), haemorrhagic cyst (case 8), endo-cervical polyp (case-5), Ca Vagina (case 6) Ca Cervix with metastasis (case-4) and Bartholin's cysts (cases 7, 9). The bilateral ovarian tumour in Case-4 was an incidental finding in the pan-hysterectomy specimen in a case which was diagnosed as carcinoma of the cervix. The vulval lesions in cases 7 and 9, were clinically thought to be Bartholin's cyst. In case 10, the USG report was acute appendicitis with a bulky uterus and an enlarged right ovary, with a clinical diagnosis of acute appendicitis.

The USG in three cases with ovarian tumour showed a cystic ovarian mass with variable echogenecity. The imaging reports of the other cases were not available for review. In case 4, the USG reports suggested an enlargement of both the ovaries, probably because of metastasis. The anatomic distribution of the tumours is shown in [Table/Fig-2].

Three patients with ovarian tumours underwent total abdominal hysterectomy with salphingo-opherectomy. In one case, pan hysterectomy with excision of the bilateral pelvic lymph nodes was

Case No	Age (Yrs)	Presenting complaints	Local examination	Histopathology diagnosis
1	38	Abdominal lump and Pain	Left adnexal mass	Left Ovary cavernous hemangioma
2	45	Abdominal lump and Pain	Left adnexal mass	Lymphangioma of Left Ovary
3	50	Vulval growth	Vulval growth-Warty	Lymphangioma Circumscriptum
4	55	Post menopausal bleeding	Cervical growth	Ca cervix with metastasis to pelvic lymphnodes, small intramural leiomyoma, Tb lymphadenitis & Bilateral ovarian hemangiomas
5	40	Post coital bleeding	Cervical growth	Cavernous hemangioma cervix
6	95	Vaginal mass	Vaginal growth	Cavernous hemangioma vagina
7	35	Labia majora growth – 10 years	Clinical diagnosis-Bartholin's Cyst. Vulval growth measuring 7 x 6 x 4cm	Angiomyofibroblastoma of vulva
8	35	Abdominal pain and mass	Hemorrhagic cyst	Left Ovary cavernous hemangioma
9	50	Vulval swelling	Vulval mass, clinical diagnosis–Bartholins cyst	Deep Aggressive Angiomyxoma vulva
10	35	Pain, abdominal mass, right iliac fossa	Right ovarian mass, acute appendicitis	Lymphangioma ovary
11	56	Multiple vesicles–vulva, 8 mths	Multiple vesicular lesions on the vulva 3x2 cms	Lymphangioma circumscriptum

[Table/Fig-1]: Clinical Presentation of the Vascular Tumours of the FGT

Anatomic Site		Histopathologic Diagnosis	Number of cases	(%)
Ovary	Left	Hemangioma	02	18.18
		Lymphangioma	01	9.09
	Right	Lymphangioma	01	9.09
	Bilateral	Hemangioma	01	9.09
Total			05	45.45
Cervix		Hemangioma	01	9.09
Vagina		Hemangioma	01	9.09
Vulva		Lymphangioma circumscriptum	02	18.18
		Angiomyofibroblastoma	01	9.09
		Deep Aggressive Angiomyxoma	01	9.09
Total			04	36.36
Total			11	100

[Table/Fig-2]: Anatomic Distribution of the Vascular Tumours

done. In case 2, left side salphingo-opherectomy was done. Endocervical polypectomy was done in case 5 and excision of the mass (vagina) was done in case 6. In cases 7 and 9, the vulval masses were excised completely. In cases 3 and 11, excision was done. In case 10, appendicectomy was done along with hysterectomy.

The gross and microscopic features are summarized in [Table/Fig-3].

Three cases with ovarian tumours showed variably enlarged ovaries with a honey-comb appearance on cut-section, with dark brown areas. Microscopy revealed cavernous hemangioma. In Cases 2 and 10, the ovaries were enlarged and the cut-section showed multiple cystic areas and solid areas. Microscopy showed numerous dilated lymphatic spaces which were filled with lymph fluid and lymphocytic infiltrates and a diagnosis of lymphangioma was made. The cervical lesion in case 5 was received as a cervical polyp which was haemorrhagic and microscopy revealed cavernous hemangioma. In case 6, the excision of the vaginal mass which was clinically suspected to be Ca Vagina, revealed cavernous hemangioma. The vulval lesions in cases 3 and 11, revealed the features of lymphangioma circumscriptum.

Case 7 had a mass in the labia for the past ten years and it was clinically diagnosed as Bartholin's cyst. As the mass was progressively increasing in size, total excision was done and microscopy revealed a tumour which consisted of alternate hypo and hyper cellular areas with numerous delicate capillary sized blood vessels which were lined by endothelial cells. The stromal cells were plump to spindle cells with a moderate amount of eosinophilic cytoplasm, having round to oval to spindly nuclei with fine chromatin and inconspicuous nucleoli. These cells were numerous in the hyper cellular areas and were clustered around the blood vessels. There was no atypia and no mitoses. A diagnosis of angiomyofibroblastoma of the vulva was made.

In case-9, a clinical diagnosis of Bartholin's cyst was made and an excision was done. Grossly, it showed soft, gelatinous, reddish brown areas. Microscopically, the lesion was moderately cellular with predominant stellate cells and few spindle cells in an abundant myxomatous stroma. The stromal cells were bland oval and showed no atypia. Amidst these were seen numerous medium to large sized blood vessels with thickening of the walls and hyalinization. Plently of pigmented macrophages were present. A diagnosis of deep aggressive angiomyxoma of the vulva was made.

In case 4, bilateral cavernous hemangioma was detected as an incidental finding during the procedure of pan-hysterectomy which was done in a diagnosed case of carcinoma of the cervix. Interestingly, in this patient, a small leiomyoma was present in the myometrium. The pelvic lymph nodes showed metastatic deposits. In addition, the lymph nodes showed a necrotizing, granulomatous inflammation which was compatible with tuberculous lymphadenitis. Both the ovaries were enlarged and showed features of cavernous hemangioma.

In all the eleven cases, there was no atypia, no mitosis and no necrosis.

DISCUSSION

Vascular tumours of the FGT, especially of the ovary, constitute a very small percentage of all the tumours of the FGT [4]. There are only a few case reports and short series of these tumours in the literature [1,4]. Vascular tumours have been reported in a wide age group which ranged from 4 months to 81 years [4]. In the present series, the ages of the patients ranged from 22 years to 95 years, with a mean age of 45.5 years. A majority of the patients were in the age group of 35-50 years (eight cases). There was no specific clinical presentation which was suggestive of vascular tumour, as

Case No	Surgical Procedure	Gross	Microscopy
1	Utero Cervix with right Salphingo opherectomy	Ovary 5 x 3 x 2 cm.	Cavernous hemangioma (Right)
2	Left Salphingo opherectomy	Ovary 8 x 5 x 3 cm. C/s multiple cystic spaces	Cystic Lymphangioma (Left)
3	Excision of lesion	Grayish brown mass 1 x 0.5 cm- vulva	Lymphangioma circumscriptum – vulva
4	Pan-hysterectomy	Ovaries – both 6 x 5 x 4 cm. c/s dark brown	Bilateral Cavernous hemangioma
5	Polypectomy	Irregular friable mass-cervix measuring 2 x 1.5 cm.	Cavernous hemangioma cervix
6	Excision of vaginal mass	Irregular necrotic and purple reddish mass measuring 4 x 3 x 2 cm.	Cavernous hemangioma vagina
7	Excision of labial mass	Globular grey-white mass measuring 7 x 6 x 5 cm. c/s well encapsulated grey-white homogenous	Angiomyofibroblastoma of the vulva
8	Hysterectomy with left salphingo opherectomy	Ovary measuring 4 x 6 cm. c/s honey comb appearance.	Cavernous hemangioma Ovary (Left)
9	Vulval mass	Pedunculated mass covered with skin. Lesion 6 x 4 cm, peduncle 3 x 1 cm. c/s soft gelatinous reddish to grey-brown un-encapsulated.	Deep aggressive angiomyxoma of vulva
10	Uterine cervix with adnexa	Right Ovary 6 x 4 x 3 cm. C/s cystic spaces and solid areas.	Cystic Lymphangioma (Right)
11	Excision of vulval lesion	Multiple vesicular lesions covered by thick epidermis	Lymphangioma circumscriptum, vulva

[Table/Fig-3]: Gross and Microscopic Features

was noted in the present series. However, these tumours can mimic other common FGT neoplasms. Malignancy was highly suspected in one case (case 6).

Hemangioma of the Ovary

Hemangioma of the ovary was first described by Payne in 1869.[2] Ovarian hemangiomas are commonly discovered incidentally at autopsy or surgery. Sometimes they are present with an abdominal mass and/or pain and acute abdomen or ascites, simulating the commoner ovarian neoplasms [4]. All the cases in the present series were symptomatic, except one (case 4), where pan hysterectomy was done in a case of primary cervical cancer which showed the incidental findings of bilateral ovarian hemangioma. Ovarian hemangiomas are usually unilateral, though bilateral cases have been reported [2]. The present series also showed incidental findings of bilateral hemangioma of the ovary.

Ovarian hemangiomas are usually situated in the medulla and the hilus. The lesion has a smooth outer surface and is red or purplish on the cut surface. In contrast to the vascular tumours in other parts of the body, the most common histologic type which is found in the ovary is the cavernous or mixed cavernous-capillary type. In the present series, all the five cases were of the cavernous type. Both the cortex and the medulla of the ovaries were involved in all the cases. The histopathological examination was diagnostic for the lesion.

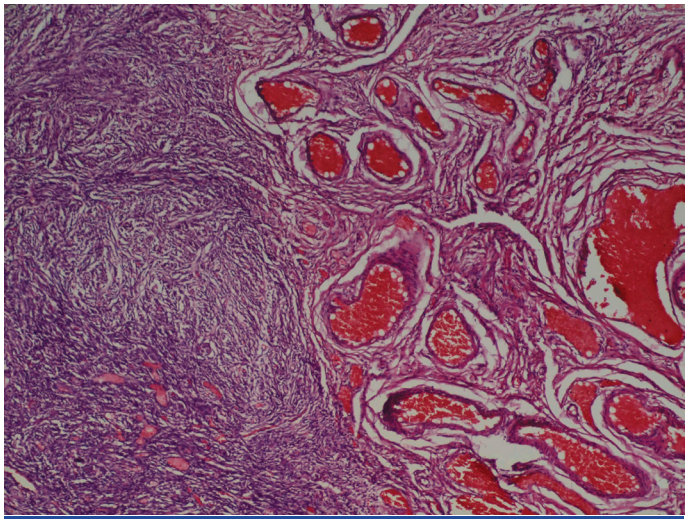
The aetiology of ovarian hemangiomas is unknown. Some state that it is a true tumour or hamartoma or stimulated vessels. Though ovarian hemangiomas are non functional, however it is well known that leutinization of the ovarian stromal cells commonly occurs as a reactive phenomenon, and that it may be associated with androgenic, oestrogenic or progestrogenic effects [5,6]. In the present study of 2 cases, leutinization of the stroma was not observed .

The pre-operative diagnosis of ovarian hemangiomas may be facilitated by radiological methods, thus making it possible to avoid radical surgery [3]. In the present series, four cases were diagnosed as ovarian cysts on ultrasound examination and they underwent radical surgery. Simple oophorectomy is curative for ovarian hemangioma [4]. So, a clinicopathologic correlation is usually essential.

Lymphangioma of the Ovary

Lymphangioma of the ovary is extremely rare, with approximately 16 cases being reported in the English literature [4,7,8]. In the present series, two cases of ovarian lymphangiomas were encountered. Clinically, they simulated other cystic tumours of the ovary, which were similar to hemangioma. Therefore, a pathological examination

[Table/Fig-4]: Gross Specimen showing incidental bilateral cavernous hemangiomas in ovaries

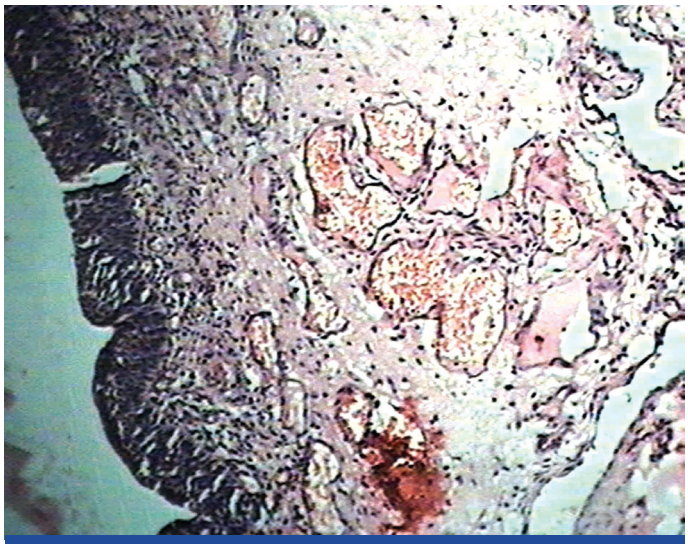


[Table/Fig-5]: Microphotograph showing numerous cavernous vascular channels in ovaries. Normal ovary is seen on left side. (Hematoxylin and Eosin × 200)

is necessary to reach the correct diagnosis. A lymphangioma has to be differentiated from a teratoma by looking for a prominent vascular component, hemangioma and an adenomatoid tumour [7]. The contents in the cystic spaces, the characteristic morphology with the lymphocytic infiltrates and immunohistochemistry may help in differentiating these conditions in the difficult cases [8].

Cervical Hemangioma

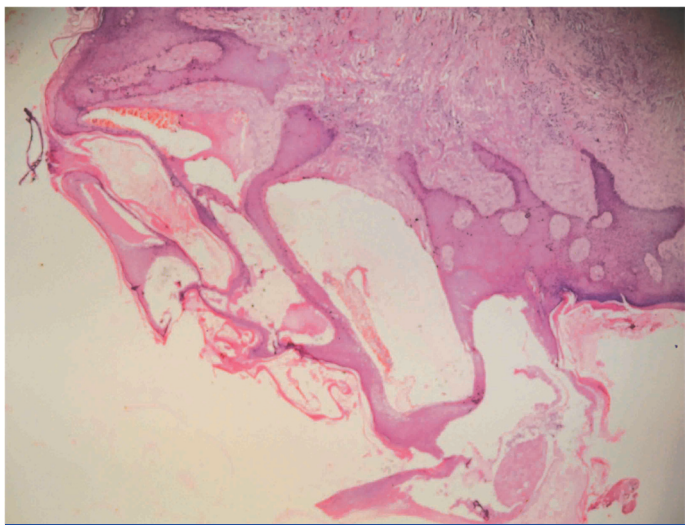
Fewer than 40 cases of hemangioma of the cervix have been reported in the literature [2,4,9]. In the present study, one case of cavernous hemangioma of the cervix presented clinically with post coital bleeding and it was diagnosed as endocervical polyp on examination. Although cervical hemangiomas are generally asymptomatic, 35% of the reported cases were associated with abnormal vaginal bleeding. In one of the reported cases, there was rapid growth of the lesion during two pregnancies, necessitating a delivery by caesarean section [9].



[Table/Fig-6]: Microphotograph showing numerous cavernous channels filled with blood seen in sub-epithelial region of vagina. (Hematoxylin and Eosin × 200)

Cavernous Hemangioma of the Vagina

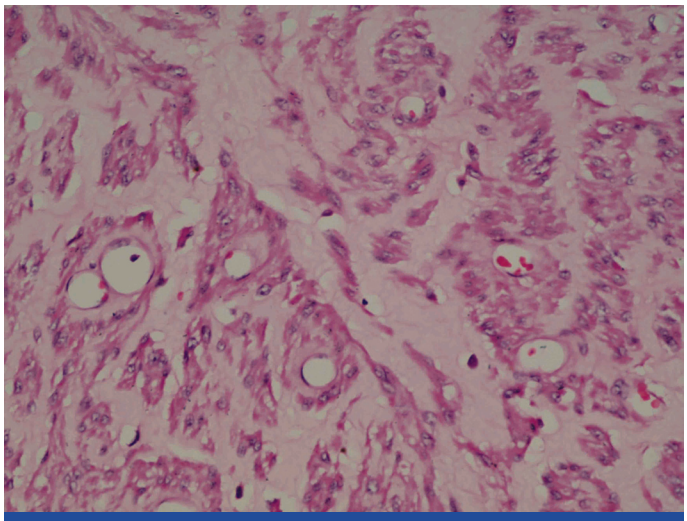
Cavernous hemangioma of the vagina is extremely rare and no cases have been reported in the literature over the past 35 years. A case of vaginal cavernous hemangioma was described by Bartsh in 1959 and a case of cavernous hemangioma during pregnancy was reported by F Rizwan in 1997 [10]. Emoto et al noted a rapidly growing vaginal lymphangioma which was obliterated via arterial embolization. The present case was a 95 years old female who presented with a mass in the paraurethral region of the vagina, which bled on touch. It was clinically diagnosed as vaginal carcinoma and was excised. The mass was vascular, necrotic and friable, with a sessile base. Microscopically, the mass revealed a hyperplastic squamous epithelium with large dilated cavernous vascular channels which were lined by flattened endothelium and it was diagnosed as cavernous hemangioma of the vagina.



[Table/Fig-7]: Microphotograph of lymphangioma circumscriptum showing hyperkeratotic hyperplastic squamous epithelium with multiple fluid filled spaces lined by flat endothelial cells in superficial and deep dermis (Hematoxylin and Eosin × 200)

Lymphangioma Circumscriptum

Lymphangioma circumscriptum is characterized by clusters of thin walled vessels which are filled with a clear fluid [11]. However, epithelial hyperplasia and hyperkeratosis give rise to firm lesions which are clinically suspected as genital warts or molluscum contagiosum. Lymphangioma circumscriptum may be congenital or acquired. To date, about 11 cases of congenital and 23 cases of acquired lymphangioma circumscriptum of the vulva have been reported in the English literature [4,11,12]. The acquired cases are mostly seen after radiotherapy to the pelvis for carcinoma of the cervix and hence, the cases are diagnosed to exclude metastatic deposits. The two cases presented with small, nodular, warty/vesicular lesions in the labia without any previous history of malignancy. Excision biopsies of both the cases revealed the features of lymphangioma circumscriptum which was covered by hyperkeratotic, hyperplastic, squamous epithelium.



[Table/Fig-8]: Microphotograph of angiomyofibroblastoma of vulva with many delicate capillary sized blood vessels surrounded by plump to spindle stromal cells with fusiform nuclei. No atypia and no mitosis. (Hematoxylin and Eosin × 400)

Angiomyofibroblastoma of the Vulva

Angiomyofibroblastoma is a rare, benign, mesenchymal tumour that occurs mainly in the vulval region of middle aged (35-45 years) women [13,14]. In 1992, Fletcher et al proposed that angiomyofibroblastoma was a clinicopathological entity which was based on the detailed observation of the vulval soft tissue tumours [13]. Different studies have suggested that mesenchymal vulval tumours in women of the reproductive age group, like angiomyofibroblastomas, aggressive angiomyxomas, cellular angiofibromas, fibroepithelial stromal polyps and superficial angiomyxomas, probably arise from a common, pluripotential, primitive cell which is located around the vessels of the connective tissue, which could show the capacity for modulating its phenotype

towards similar but distinctive mature cells [15,16]. These can present diagnostic difficulties for pathologists because of their relative rarity and their overlapping morphological features.

There are only over 70 cases which have been reported in the English literature to date [16].

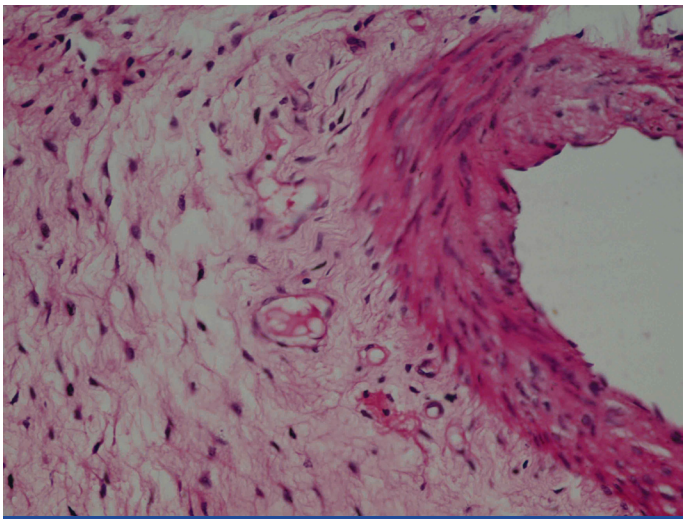
Angiomyofibroblastomas are well circumscribed and range from 0.5 to 12cm, but usually measure <5cm. They can be adequately treated by wide local excision [14,15,16]. On histological examination, angiomyofibroblastomas have been found to be composed of alternating hypercellular and hypocellular oedematous areas in which numerous, thin walled, small to medium sized vessels are regularly distributed. The tumour cells which are described as stromal cells, have a spindle to rounded or epithelioid appearance. The tumour cells are characteristically aggregated around the vessels or are loosely dispersed in the hypocellular areas. Nuclear atypia and mitosis are not seen. The oedematous area typically contains wavy collagen fibres, but little or no mucin. The differentiation between angiomyofibroblastoma and aggressive angiomyxoma may be very difficult, both clinically and histologically [16].

In the present study, one case of angiomyofibroblastoma was diagnosed, which presented clinically as Bartholin's cyst and was present for the past ten years. She came to the hospital because the mass was progressively increasing in size. Grossly, it was a globular, grey white mass which measured 7 x 6 x 5 cms. The cut section showed a well encapsulated, grey white, soft rubbery mass which was histologically diagnosed as angiomyofibroblastoma.

Aggressive Angiomyxoma of the Vulva

Aggressive angiomyxoma was first described by Steeper and Rosai in 1983 [17]. This is a rare, locally infiltrative tumour that arises in the pelvic and perineal soft tissues of young women [17]. Approximately 100 cases have been reported [16]. Aggressive angiomyxoma has a high rate of local recurrence because of its infiltrative growth and anatomical location. The treatment of choice is wide local excision. The local recurrence rate is in the range of 50-70% as has been reported [17,18].

Grossly, aggressive angiomyxoma is a non-encapsulated, gelatinous tumour with an infiltrative edge. The histological examination shows a hypocellular tumour with small ovoid, spindled or stellate cells which exhibit minimal nuclear atypia, if any. Mitotic figures are not common. Numerous blood vessels are present and they vary from thin walled capillary like vessels to large vessels with thick muscular walls [18]. There is no specific immuno-histochemical marker for aggressive angiomyxomas as yet. The tumour cells uniformly express vimentin and they heterogeneously express muscle specific actin and desmin [15,16].



[Table/Fig-9]: Microphotograph of aggressive angiomyxoma of vulva showing abundant myxoid stroma with bland oval stromal cells with no atypia. Also seen is large blood vessel with thickening and hyalinization of the walls. (Hematoxylin and Eosin × 400)

Srinivasan R et al reported an aggressive angiomyxoma which presented as a vulval polyp [19]. We also encountered a case of aggressive angiomyxoma in a 50 year old female, with the clinical presentation as Bartholin's cyst. Grossly, it was a pedunculated mass which was covered with skin, which measured 6 x 4 cm, with a gelatinous cut section appearance. Based on the characteristic histological features, a diagnosis of deep aggressive angiomyxoma was made. There was no recurrence upto nine months of follow up.

The cases of angiomyofibroblastoma and aggressive angiomyxoma in the present series illustrated that the differential diagnosis could be difficult. The tumours were rather similar in clinical presentation as well as at surgery and on histopathologic examination. Both the cases presented as a soft non tender swelling in the vulva and were preoperatively diagnosed as Bartholin's cyst. The atypical and diagnostically misleading clinical features were the large size of the angiomyofibroblastoma and the near absence of local infiltration of the aggressive angiomyxoma. Similar features were observed by Schotz et al. These tumours are so rare that many gynaecological surgeons will never see one [16].

CONCLUSION

The benign vascular tumours of the FGT present clinically, simulating the common gynaecological tumours; some are asymptomatic and are found incidentally. Vascular tumours, especially of the ovaries, are difficult to differentiate clinically and radiologically from other neoplastic conditions. Sometimes they may be present as an acute abdomen. A detailed clinicoradiological examination is needed to find the extent of the vascular lesion. A pathological examination is necessary in all such cases, to exclude a probability of malignant vascular tumours .Benign vascular tumours have to be differentiated from malignant vascular tumours like angiosarcoma which are rarer than the benign entities, with only a handful of cases being reported in the literature [4,12]. Angiomyofibroblastoma and aggressive angiomyxoma are very rare vulval mesenchymal tumours which share similar clinical and histopathological features which cause diagnostic problems. Surgical excision is curative in most of the cases and tumours like aggressive angiomyxomas are carefully followed up because of their common recurrence and local invasiveness.

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