IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 16, Issue 11 Ver. I (Nov. 2017), PP 47-52
www.iosrjournals.org

Histopathological Study of Vascular Lesions

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Abstract
Background: *Vascular lesions show a broad variety of morphological appearances and cilinical behavior, the lesions are ranging from inflammatory, benign hemangiomas to intermediate lesion, which are locally aggressive, to highly malignant angiosarcoma. There is also the grey zone between true neoplasia and hamartoma, which makes difficulty in histopathological assessment. It is also important to decide the degree of malignancy as it can strongly influence the choice of treatment and prognosis.*
Materials and Methods: *98 cases of vascular lesions at the department of pathology, Siddharda medical college, Vijayawada,for a period of three years(2014 -2016) have been studied retrospectivelyand histopathological features were analyzed.*
Results:*A total of 98 vascular lesions were identified. Thsese were classified into inflammatory and neoplastic. The neoplastic tumors are subclassified into benign, intermediate and malignant according to WHO classification. The various vascular lesions identified were Leucocytoclastic vasculitis, Small vessel vasculitis, Granulomapyogenicum,Capillary hemangiomas, Cavernous hemangiomas,AV malformation, Sclerosing hemangiomas, Verrucous hemangioma, Intramuscular hemangioma, Hemangioblastoma, Angiokeratoma, Hemangioendothelioma, Epithelioidhemangioendotheliomama, Angiosarcoma,Epithelioid Angiosarcoma and Glomus tumor (Perivascular tumour). Majority of vascular tumors were benign, more common in children and young adults, most common sites were head and neck, which required only local surgical excision.*
Conclusion: *Malignant and intermediate tumors formed as extremely small proportion of vascular tumors, which should be treated aggressively and closely followed up.*
Keywords: *Vascular lesions, WHO classification, Benign, Intermediate and Malignant.*

Date of Submission: 23 -10-2017 Date of acceptance: 04-11-2017

I. Introduction

Apart from inflammatory lesions, vascular lesions include tumors arising from blood vessels as well as perivascular tumors. They are among the few groups of tumors, which can show a broad variety of morphological appearances and clinical behaviour. They constitute a spectrum from benign hemangiomas to intermediate lesion, which are locally aggressive, to highly malignant angiosarcoma.[1]The histopathological assessment of soft tissue vascular tumors is considered difficult not only because of the grey zone between neoplasia and hamartoma but also because it is frequently difficult to distinguish between benign and malignant lesions.[2] The main issue remains not only the distinction between benign and malignant lesions but also the degree of malignancy, as it strongly influence the choice of treatment and prognosis.The majority of soft tissue vascular tumors in children are benign.[3] Unless pleomorphism and abnormal mitoses are seen, malignancy should be diagnosed with caution. Since most vascular tumors of intermediate malignancy do not behave aggressively, complete and ideally wide local excision without adjuvant therapy should be offered to patients and close follow up is needed.Treatment such as amputation, chemotherapy or radiation can thus be avoided. The present study includes the vascular laesions mainly the tumours in the modified version of classification of vascular tumors proposed by WHO[4]. It is an endeavour to classify vascular tumors into benign, intermediate and malignant based on histopathology.

Objectives

1. To study the histopathological patterns of vascular lesions.
2. To study the incidence of vascular lesions in relation to age, sex and site with special emphasis on vascular tumors.
3. To classify tumors into benign, borderline malignant neoplasms so as to decide mode of treatment.

II. Material & Methods

A Total of 98 cases of vascular lesions were included in this retrospective study during the period of three years(2014-2016) at Department of Pathology, Siddhartha Medical College,Vijayawada.The data including age, sex, tumour site and histological diagnosis were collected. The cases were classified into

inflammatory and neoplastic conditions (Benign tumors and tumor like conditions/ Intermediate/ Malignat). The tumours were classified based on WHO classification. Detailed macroscopic examination was carried out. For histopathogical examination, formalin fixed paraffin embedded representative tissue sections were stained with Hematoxylin and Eosin. Wherever necessary, relevant sections were stained with Reticulin stain and final confirmation of the diagnosis was made.The details of clinical history and relevant investigations and imaging findings were obtained in every case and were analyzed.Cases which are not confirmed, cases of mixed vascular tumours, tumours of undifferentiated nature,tumorsof fibroblastic/myofibroblastic origin (Hemangiopericytoma) and the patients who died before any therapeutic measure and the patients who left the hospital against medical advice were excluded from the study.

III. Results

Table 1: Proportion of vascular lesions with relation to gender(n=98)

Gender	Inflammatory	Benign	Intermediate	Malignant
Male	04(4.08%)	31(40.6%)	03(66.6)	03(50%)
Female	07(7.14%)	46(51.3%)	01(33.4%)	03(50%)
Total	11(11.22%)	77(78.57%)	04(4.08%)	06\(6.12%)

Table 2: Distribution of vascular lesions in relation to location(n=98)

	Head &Neck	Trunk	Extremities	Total
No of cases	48	26	24	98
Percentage	48.7%	27%	24.3%	100%

Table 3: Age and Gender wise distribution of vascular lesions(n=98)

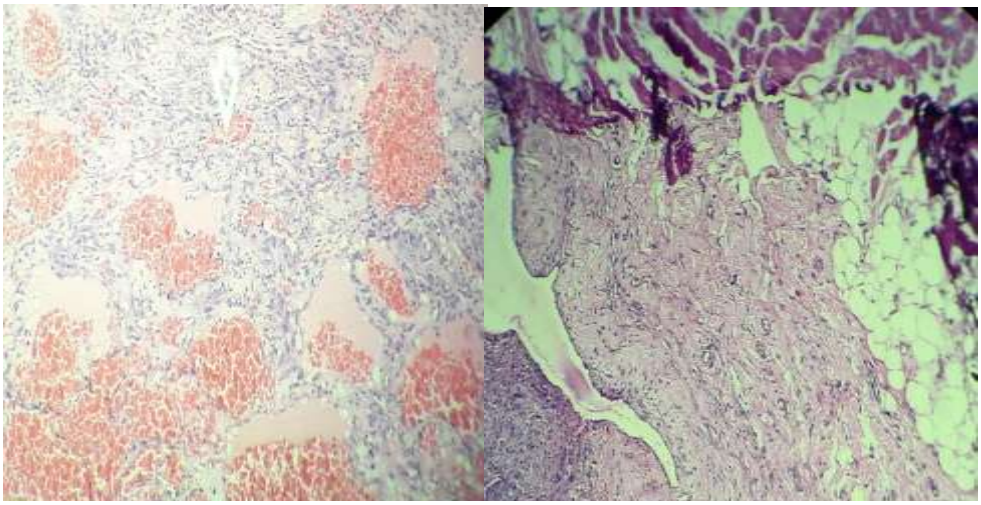
Agegroup(years)	Male	Female	Total
0-10	00	02	02
11-20	00	18	18
21-30	13	11	24
31-40	11	11	22
41-50	11	11	22
51-60	08	02	10
Total	43(43,2%)	55(56.8%)	(100%)

Table 4: Distribution of various histological type of lesions (n=98)

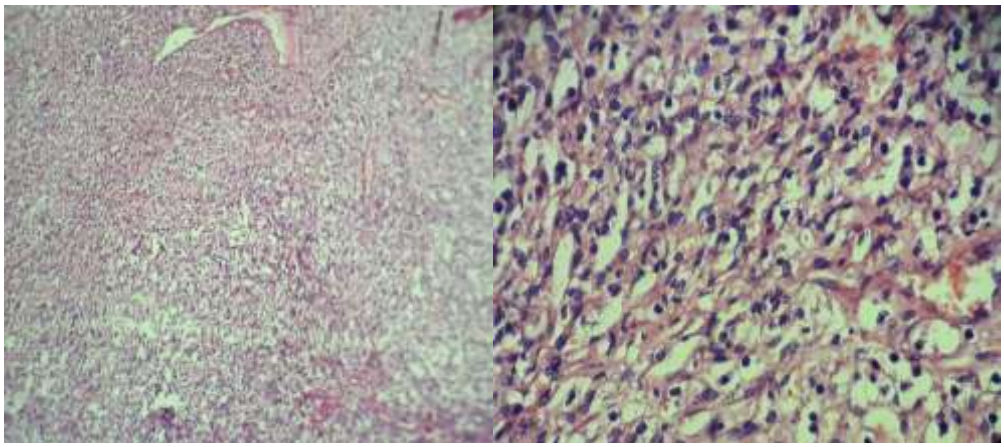
Histological type	Number of cases	
	Number	Percentage
Inflammatory		
Leucocytoclastic Vasculitis	07	7.14%
Small vessel vasculitis	04	4.08%
Benign lesions		
Granuloma pyogenicum	4	47.95%
Cavernous hemangiomas	08	8.16%
Capillary hemangiomas	07	7.14%
AV malformation	06	6.12%
Sclerosing hemangiomas	04	4.08 %
Verrucous Hemangioma	02	2.04%
Intramuscular Hemangioma	01	1.02%
Hemangioblastoma	01	1.02%
Angiokeratoma (Vascular ectasia)	01	1.02%
Intermediate lesions		
Hemangioendothelioma	04	4.08%
Malignant lesions		
Angiosarcoma	04	4.08%
Epitheloid Angiosarcoma	01	1.02%
Epitheloid Hemangioendothelioma	01	1.02%
Total	98	100%

In the present study, majority of the vascular tumors were benign (Table No. 1). The commonest sites were head and neck followed by trunk and extremities (Table No. 2) and the tumors were found predominantly in females (Table No.3). The incidence of benign was higher in females as compared to males. But the incidence

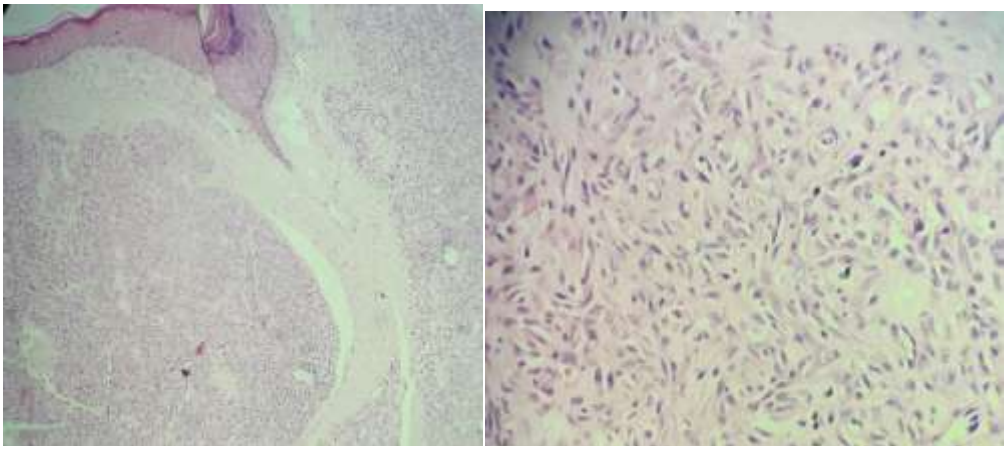
of malignant tumors showed equal gender distribution. (Table No.4). The incidence of vascular tumors was more in males as compared to females in the age of 21-30 years. The females showed higher incidence from 11-20 years of age. (Table No.4). Benign tumors were more common than malignant tumors. Pyogenic granuloma were the commonest vascular tumors followed by capillary hemangioma and cavernous hemangiomas (Table No.4). Follow up of patients was attempted inborderline and malignant cases but the patients were untraceable and lost to follow up study.



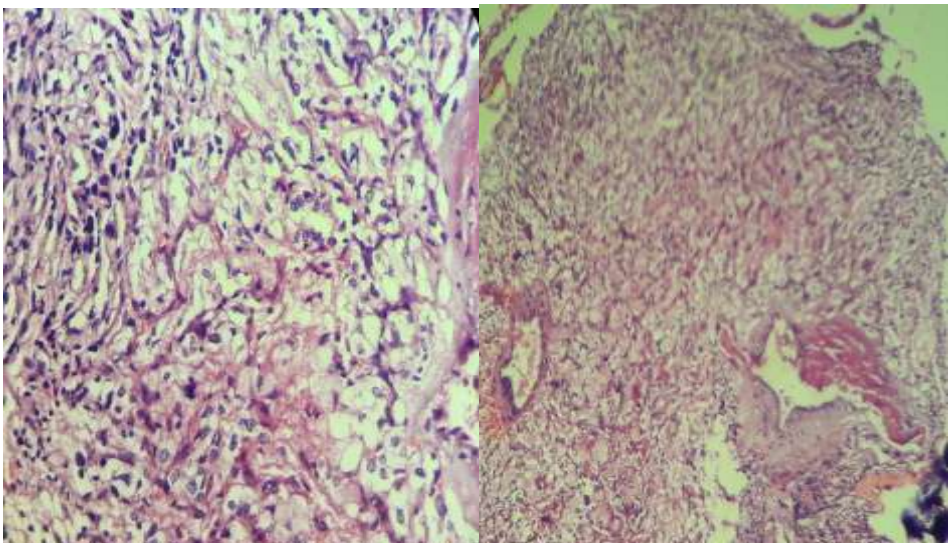
Capillary Hemangioma H&E 40xIntramuscular Hemangioma H&E 40x



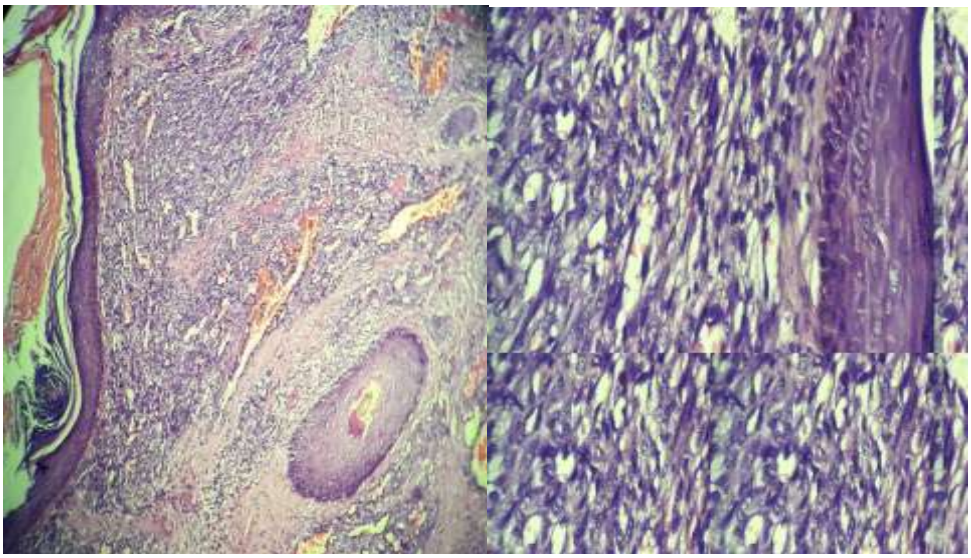
Capillary Hemangioma H&E 10xCapillary Hemangioma H&40x



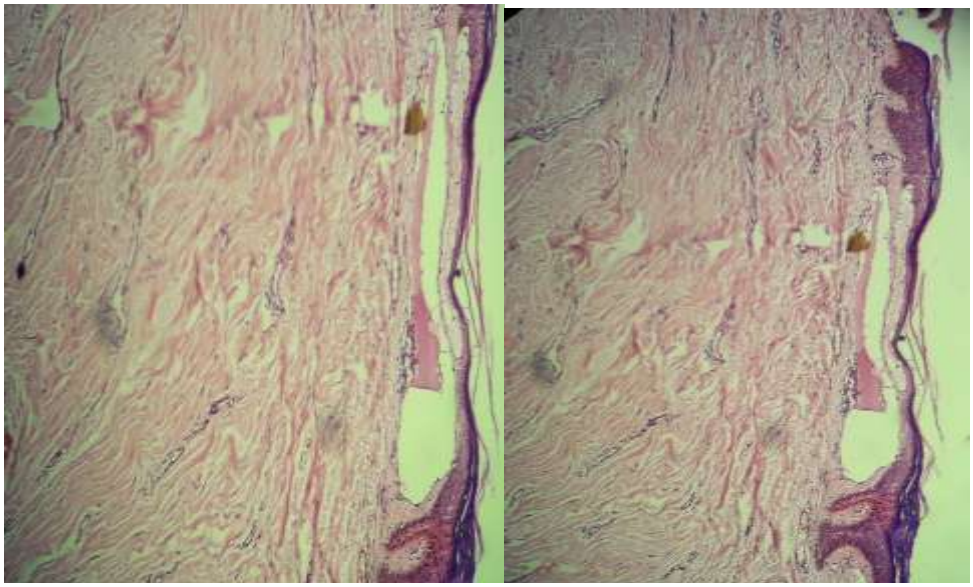
Pyogenic Granuloma H& E 10xPyogenic granuloma H& E



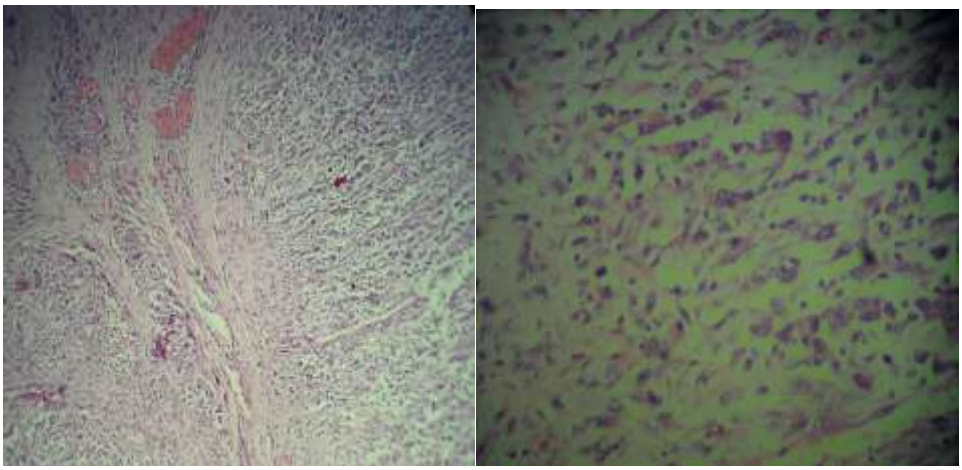
Hemangioblastoma H&E 40XVascular malformation H&E 40x



Epitheloid Angiosarcoma H&E 10XEpitheloid Angiosarcoma H& E 40x



Sclerosing Hengioma H&E 10XSclerosing Hemangioma H&E 40x



Angiosarcoma H&E 10X Angiosarcoma H&E 40X

IV. Discussion

An increasing number of vascular lesions have been recognized as histologically distinct entities. Furthermore, there have been significant advances in their behavior and underlying genetics of previously identified lesions. These developments have required restructuring and expansion of the classification scheme so that appropriate therapies may be studied and implemented in affected patients. In the present study Pyogenic granuloma,most common of all vascular tumors and its proportion to be 32-42 % of all vascular tumors. [2,3,5,6].The tumors are most common in infancy and childhood. Most of the cases in the present study were located in head and neck region. We have come across one case of deep haemangioma (intramuscular) in our study with relevant gross and microscopic findings.Hemangiomas (Capillary&Cavernous), second largest group of vascular tumors found in all decades of life. In the present study most of the lesions (48 out of 98) were located in head and neck region including gingiva, buccal mucosa, scalp and chin, remaining lesions were located in distal extremities including fingers and toes. In the second most commonest group of hemangiomas, apart from capillary, cavernous types rare types like sclerosiing and verrucous hemangiomas were diagnosed in this study. The commonest sites were head and neck followed by extremities.

Leucocytoclastic vasculitis, the third largest group of vascular lesionscommonest in the first three decades of life.One case of Angiokeratoma which is one type of vascular ectasias that was recently included under the Benign tumors and tumour like conditions.In this study, one rare case of benign lesions was diagnosed as Hemangioblastoma which occurs in Cental nervous system , but the origin is from vascular cells. Epithelioid Hemangioendotheliomaocuurs in early to mid adult life commonly in females in head and neck region. It is included under the malignat vascular lesions in the recent WHO classification,In the present study the lesions were commoner in females and the maximum incidence was in the age group of 21-30 years. It is found to be most common in extremities followed by head and neck and trunk while age range is wide but it is most common in middle age.[7] In the present study a 29 year old male patient presented with gradually increasing swelling on right fore arm with discharging sinuses for two years. On X – ray examination soft tissue opacity with areas of calcification and underlying bone destruction was found. Histopathological findings were correlated. Reticulin stain was done to demonstrate vascular location of tumor cells and reticulin network around gropus of tumour cells.

The entity epithelioid hemangioendothelioma based on its locally aggressive behavior as well as the occurrence of lymph node metastases, classification within the intermediate category, in between hemangioma (benign) and angiosarcoma (malignant), could be considered. It is the only accepted low-grade malignant vascular tumor of bone. Unfortunately no molecular genetic data are available to support the proposed classification. Future molecular studies might reveal whether there is indeed a continuum between hemangioma and angiosarcoma. Epitheloid Angiosarcoma presents as solitary or multiple nodules in extrmities usually in second or third decades of life.Clinical course is intermediate between hemangiomas and angiosarcoma. In the present series, out of four cases, one case in a 45 year old female who presented with a mass over left lateral aspect of thigh. Excision biopsy was done and sent as a skin covered soft tissue mass of about 5x4x2 cm in size. In other case of Angiosarcoma, the patient was a 55 years old male presenting with a growth in right inguinal region. The tumor was differentiated from benign vascular tumor by the presence of nuclear atypia and the anastomosing nature of blood vessels. Based on relevant histological findings, these cases were diagnosed as Angisarcoma with correlation of clinical presentation.Angiosarcoma is a rare malignant vascular tumor.[8,9]

They are aggressive with poor prognosis. 60 % occur in skin and superficial soft tissue whereas 50 % cutaneous angiosarcomas occur in head and neck.The lesions are most common in elderly males.A variant of Angiosarcoma,Epitheloid variant of Angiosarcoma was diagnosed in this study.The new classification retains the broad categories of neoplasms and malformations but now divides the tumor group into benign, locally aggressive or borderline, and malignant and also includes malformations. The known clinical courses and imaging, histologic, and genetic findings of the most common and/or clinically relevant lesions are described in this article.

V. Conclusions

Vascular lesions consist of a heterogeneous group of entities, which over the past decade have been better delineated, especially regarding few entities like epitheloid hemangioendothelioma. The present study concludes that majority of tumors were benign vascular tumors which require only local surgical excision. Malignant and intermediate malignant tumors formed as extremely small proportion of vascular tumors, should be treated aggressively with regular follow up.

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*Dr. D. Kalyani. "Histopathological Study of Vascular Lesions ." IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) 16.11 (2017): 47-52