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Lobular Capillary Haemangiomas with Its Kaleidoscopic Presentations

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Abstract

Lobular capillary hemangioma is a benign vascular tumor. It occurs in response to various stimuli such as local irritation, traumatic insult, and hormonal factors or as a response to a wide variety of drugs. This is a retro spective study of cases presenting to the Department of Pathology, MGM Medical College, Navi Mumbai between January 2019 to December 2021, who were diagnosed by histopathologic confirmation as Lobular Capillary Hemangioma (LCH), also known as Pyogenic Granuloma (PG), were evaluated for the area involved, clinicopathologic presentation, demographic features, and mode of excision. A total of 27 cases were identified as LCH by histopathologic confirmation during this period. The lesion occurred most commonly in the age group of 31–40 years.

A characteristic female predo minance was seen. The most common site was found to be hand followed by face. There is little evidence of cases reporting with lobular capillary haemangioma involving sites other than oral and nasal cavity.

Keywords: Excision, lobular capillary hemangioma, pyogenic granuloma, pathology.

Introduction

Haemangioma is a benign tumour, well circumscribed comprising proliferation of predominantly small capillary sized blood vessels. It is one of the most common tumours of childhood and infancy, although it occurs in all age groups. It has varied histological appearance distinguishing them into variants. Pyogenic granuloma, also known as Granuloma Pyogenicum, is a common, acquired, benign, vascular tumor that arises in tissues such as the skin and mucous membranes. Lobular capillary hemangioma is a relatively accurate term for this entity. Pyogenic granulomas were thought to be an exaggerated granulomatous reaction to an infectious or pyogenic stimuli, which led to the derivation of misnomer, 'Pyogenic Granuloma' and 'Granuloma Pyogenicum.' Recent studies have found the patho genesis of Lobular Capillary Haemangioma (LCH) to be multifactorial where abnormal function of downstream pathways and uncontrolled angiogenesis results in endothelial proliferation. The lesion grossly appears as a solitary, red, pedunculated papule that is very friable. Less commonly, it may present as a sessile plaque. It shows rapid exophytic growth, with a surface that often undergoes ulceration. Pyogenic granuloma

(PG) has a path gnomic, lobular arrangement of capillaries at its base.

The lobules consist of discrete clusters of endothelial cells and variably sized lumina. The superficial portions of the lesion may undergo non- specific, secondary changes in the form of stromal edema, capillary dilation, inflammation, and a granulation tissue reaction.

Aim and objectives of the study

- The aim of the study is to assess the his to- mor phological features of Lobular Capillary Haemangioma (LCH)/ Pyogenic granuloma (PG) in MGM Medical College, a tertiary care hospital in Navi Mumbai.
- To assess the distribution of age in diagnosed cases of Lobulated Capillary Haem angioma/ Pyogenic granuloma.
- To assess the gender prevalence in diagnosed cases of Lobulated Capillary Haem angioma/ Pyogenic granuloma.
- To note a significance of site of occurrence of the lesion.
- To correlate the clinical correlation of the lesion and assess its significance.

Materials and methods

Study details

Place of study

This study was conducted in Department of Pathology, Mahatma Gandhi Mission's Medical College and Hospital, Navi Mumbai. The processing was done in Histopathology Section, Mahatma Gandhi Mission's Hospital, Navi Mumbai.

Study design

A Retrospective Study.

Study period

Three Years (Duration: January 2019 to December 2021)

subject enrollment

Inclusion criteria

All the specimens that were received for histopathology examination during the study period at Central Laboratory- His to pathology Section, MGM Hospital, Navi Mumbai.

Exclusion criteria

Patients having inadequate or absent medical records.

Collection of samples

Patients of all ages will be considered in the study. Clinical details of the patient including age, gender, affected site, size of the lesion, and treatment were taken from the requisition forms received at histopathology section of the Central Laboratory.

Methodology

Specimens will be received in 10% buffered formalin and processed under routine histopathology techniques. All specimens will be subjected to gross and micros copic examination. Sections will be cut from the paraffin blocks and the sections will then be stained with H and E stain and examined micros copically.

Data analysis

Data will be stored in MS excel and basic analysis like frequency percentage and graph will be prepared using MS Excel.

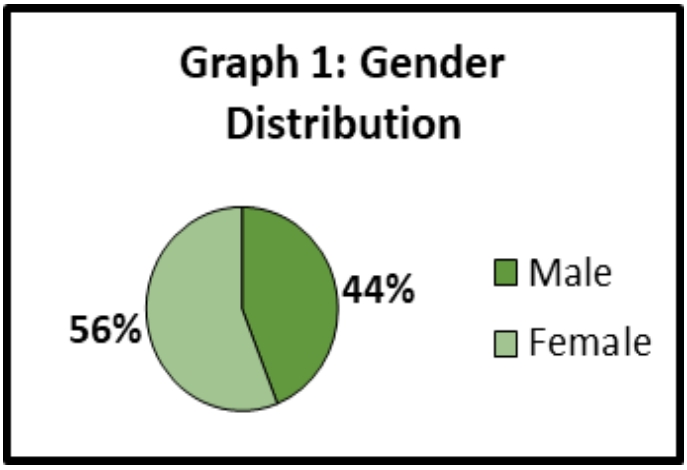
Using SPSS test of significance and P value will be calculated, if required.

Observations

Gender

There were total of 27 cases. 12 (44%) were male and 15 (56%) female patients (Graph 1) with a characteristic female predominance noted with a female to male ratio of 1.25:1. [Graph 1]

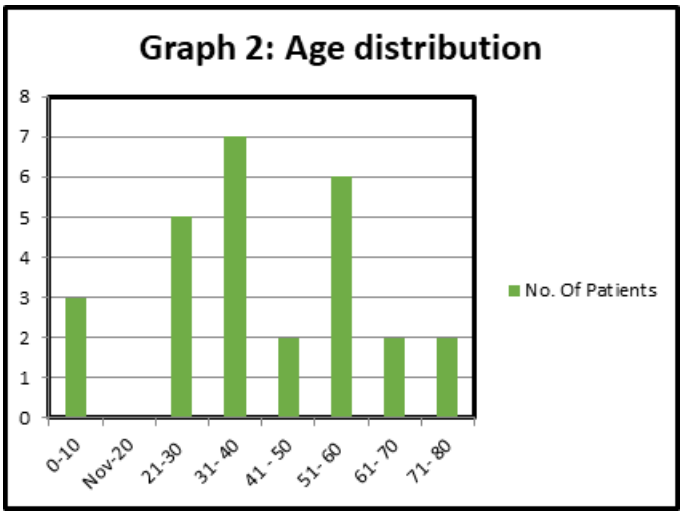
Graph 1:



Age

The lesion was most frequent in the fourth and sixth decade of life with 7 (25.9%) patients belonging to the age group between 31 and 40 years and 6 (22.2%) patients belonging to the age group between 51 and 60 years [Graph 2]. The mean age was 39 years, ranging with from 4 to 77 years of life.

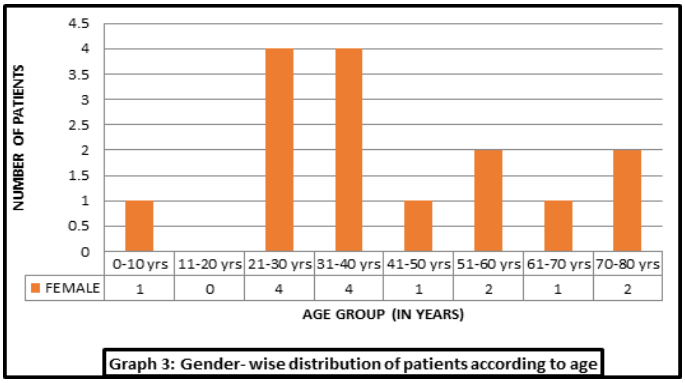
Graph 2:



Gender and age

Amongst 15 female patients, the mean age was 42 years, with majority age belonging to third and fourth decade of life. 4 females each belonged to the third (26.6%) and fourth (26.6%) decade of life respectively.

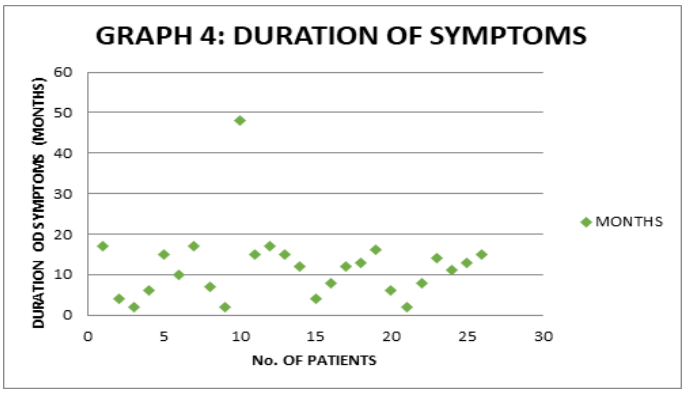
Graph 3:



Duration of symptoms

The mean duration of symptoms was 2-3 months in the majority, with 5 patients claiming to have the lesion since 1 year and 2 patients claiming to have the lesion since birth.

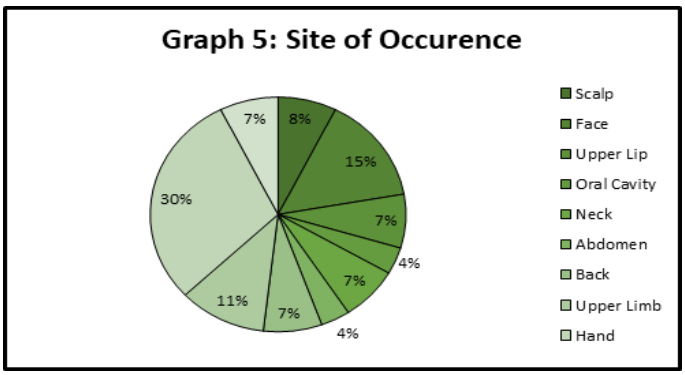
Graph 4:



Site of occurrence

An assessment of the site of occurrence showed hand to be a frequent site in 8 cases (29.6%) followed by face in 7 cases (25.9 %). Uncommon presentations at Abdomen (1 case) and Scalp (2 cases) were noted too. (Graph 2)

Graph 5:



Method of removal

The method of removal used were Curettage and Cautery, Surgical excision and Endoscopic removal depending upon the site and size of the lesion.

Fig 1. A single, polypoidal, grey tan to yellow mass noted.

Gross features

Gross features showed masses ranging from 1.5 – 2.5 cm in size and were single, smooth, polypoidal, tan to dark red.

The sizes ranged in their widest diameter from a few millimeters to about 5.8 centimeters.

Microscopic features

Histopathology showed sections of lesions covered by a thin, ulcerated stratified squamous par keratinized epithelium with underlying stroma of increased proliferation of blood vessels of varying sizes lined by plump of flattened endothelial cells arranged in lobules. Intervening stroma is fibro- collagenous and also shows loose, edematous areas along with mixed inflammatory cells comprised of lymphocytes, plasma cells, and neutrophils. Few lesions also showed ulceration.

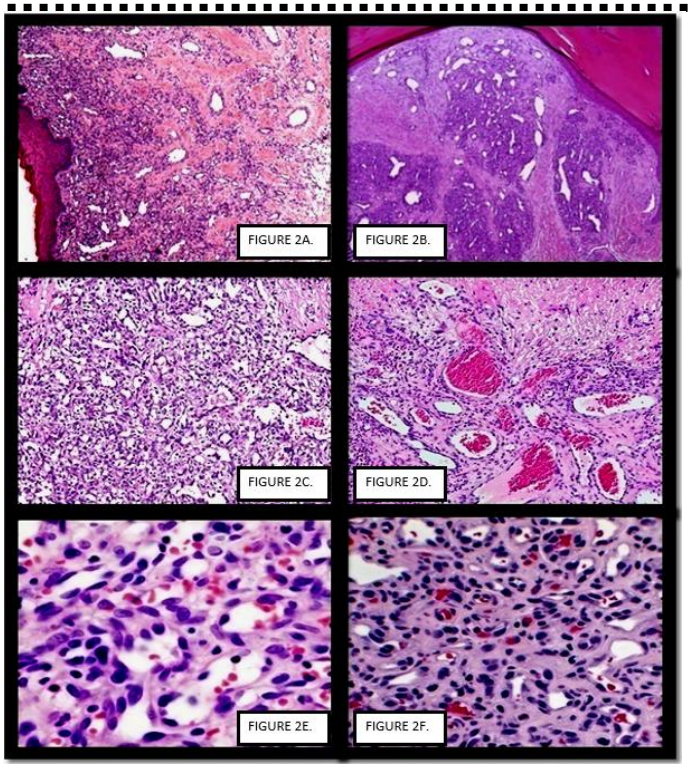


Fig 2A, C&E: Non- Lobulated LCH. Fig 2B, D&F: Lobulated LCH

Fig 2. A&B. H and E-stained section studied at 4x magnification shows proliferation of blood vessels arranged in non- lobulated (A, C&E) as well as lobulated architecture (B, D&F). C&D. Similar findings noted in 10x magnification. E&F. H and E sections at 40x magnification, also showing moderate to dense infiltration of mixed inflammatory cells.

Discussion

Frank and Blahd M. first described LCH as Pyogenic granuloma in mid 1900s. Again, due to its characteristic microscopic features Mills et al termed Pyogenic granuloma as Lobulated Capillary Haemangioma. [1] As per the literature, LCH shows a female preponderance and most common occurrence in the third decade of life [2] In our series, 56 % of the patients were female with a characteristic female predominance noted with a female to male ratio of 1.25:1. This parameter shows a concordance with Bischow et al [3] and Narayan swamy

et al [4], however, it shows discordance with study done by Puxeddu et al [5].

Table 1: Comparison of Gender preponderance with other studies.

Parameters	This Study	Bischow et al	Narayanaswamy et al	Puxxedu et al
Gender Preponderance	Female	Female	Female	Male

The present study shows the mean age of occurrence in the fourth and sixth decade of life. The mean age was found to be 39 years, ranging from 4 to 77 yrs. This finding varied with the study by Bischow et al, Narayanaswamy et al and Puxeddu et al [3,4,5]

Table 2: Comparison of Age with other studies.

Parameters	This Study	Bischow et al	Narayanaswamy et al	Puxxedu et al
Decade of **Occurrence**	4th and 6th Decade of Life.	3rd Decade of Life	3rd Decade of Life	5th Decade of Life
Range of Age	4 to 77 yrs	18 to 57 yrs	-	-
Mean Age	39 yrs	30.6 yrs	-	-

The duration of symptoms was averagely found to be 2 to 3 months. In 5 patients, the lesion was noted since 1 year while 1 patient claimed to have the lesion since birth. This was similar to the result by Bischow et al [3].

Table 3: Comparison of Duration of Symptoms with other studies.

Parameters	This Study	Bischow et al	Narayanaswamy et al	Puxxedu et al
Duration of Symptoms	2- 3 months	2-3 months	-	1 week to 5 yrs

The most common site was noted to be hand followed by face. A 37-year-old, male presented with the complaint was rapidly growing painless growth at an unsual site of abdomen. Both the females in the 8th decade, presented with lesion on scalp. The site of the lesion could not be compared as the other studies were specific to either oral cavity or nasopharynx.

Table 4: Comparison of Site of Occurence with other studies.

Parameters	This Study	Bischow et al	Narayanaswamy et al	Puxxedu et al
Site of **Occurrence**	Hand> Face	Nasal	Nasal Septum	Nasal Cavity

Study by Bischow et al (2020) was in concordance with our study in terms of gender and duration of symptoms while their findings of mean age of occurrence varied with the present study. [3] Narayanaswamy et al. (2015) study also showed 80% (16/20) of females and 80% of the study population were in the third decade [4]. Narayanaswamy et al was also able to assess the predisposing factors of the lesion. Puxeddu et al. study (2006) was in discordance with the idea of female predominance as well as with the peak incidence, their study showing it to be in fifth decade of life.[5] In all the study, The mass was excised via surgical excision and electrocautery either classically with the head light or endoscopically.

Grossly and clinically, the lesion is usually elevated, pedunculated or sessile, mass with smooth, sometimes lobulated and warty surface which can commonly show ulcerations covered with yellow fibrinous membrane. The colour ranges from deep red, reddish purple to pink depending on its duration and vascularity of the lesion.

The lesion shows a tendency for hemorrhage either spontaneously or upon slight trauma. The lesion is painless and soft in consistency; although older lesions tend to become more collagenized and firm. The size of the lesion usually ranges between 0.5cm-2cm, and they may grow at an alarming rate reaching that size in just 4-7 days [6]

Table **5**: Comparison of Gross features with other studies.

Parameters	This Study	Bischow et al	Narayanaswamy et al	Puxxedu et al
Gross Features	Elevated/ Pedunculated/ Sessile Colour can vary from deep red to gray tan. Soft to firm consistency. Varied sizes. Secondary changes	Elevated/ Pedunculated/ Sessile Colour can vary from deep red to gray tan. Soft to firm consistency. Varied sizes. Secondary changes	Elevated/ Pedunculated/ Sessile Colour can vary from deep red to gray tan. Soft to firm consistency. Varied sizes. Secondary changes	Elevated/ Pedunculated/ Sessile Colour can vary from deep red to gray tan. Soft to firm consistency. Varied sizes. Secondary changes

Histopathologic ally, the lesion is covered by thin Para keratinized stratified squamous epithelium which is often atrophic and ulcerated. The underlying connective tissue exhibits delicate fibro cellular stroma with vast numbers of endothelium-lined vascular spaces infiltrated with chronic inflammatory cells mainly lymphocytes, plasma cells, and neutrophils.[7,9]

Table 6: Comparison of Microscopic features with other studies.

Parameters	This Study	Bischow et al	Narayanaswamy et al	Puxxedu et al
Microscopic Features	Lobular to Non-lobular architecture. Plenty of blood vessels of varying sizes. Mild/ Moderate/ Dense infiltration of inflammatory cells. Secondary changes	Lobular to Non-lobular architecture. Plenty of blood vessels of varying sizes. Mild/ Moderate/ Dense infiltration of inflammatory cells. Secondary changes	Lobular to Non-lobular architecture. Plenty of blood vessels of varying sizes. Mild/ Moderate/ Dense infiltration of inflammatory cells. Secondary changes	Lobular to Non-lobular architecture. Plenty of blood vessels of varying sizes. Mild/ Moderate/ Dense infiltration of inflammatory cells. Secondary changes

Although, literature has defined two histological types of Pyogenic granuloma of the oral cavity as the Lobulated type and non- lobulated type.[15] This histology was also noted in lesions located in places other than the oral cavity. The lobular area of the LCH PG contained greater number of blood vessels with small luminal diameter than the central area of non-LCH PG.[8]

The variants of LCH include oral mucosal, satellite, intravenous, dermal, and subcutaneous. Subcutaneous is the rarest form of LCH and lacks the distinct friable, raised, easily bleeding appearance that is characteristic of

the more common counterpart. [10] The subcutaneous variant was the most common variant noted in our study. This finding may be attributed to the site of occurrence of the lesions. The differential diagnosis of LCH includes Bacillary angiomatosis, Benign (infantile) hem Angio endo the lioma, Reactive Angio endo the liomatos is as well as Kaposi Sarcoma, Angiosarcoma and Non-Hodgkin's Lymphoma of Head and Neck. Bacillary angiomatosis, an AIDS-related lesion, shows dense, extracellular deposits of pale Hema toxyphilic granular material representing masses of bacilli that stain positive with Warthin- starry stain [12].

Kaposi's sarcoma of Acquired Immuno-Deficiency Syndrome (AIDS) shows proliferation of dysplastic spindle cells, vascular clefts, extravasated erythrocytes and intracellular hyaline globules, none of which are features of PG[11,12] PG can be distinguishable from angiosarcoma by its lobular growth pattern, well-formed vessels, and cytologically bland endothelial cells[12] In children congenital malformations, dermoid cyst, angiomatous polyp, meningocele, angiofibroma, glioma and schwannoma should be kept in mind. Recurrence is also noted in cases of Pyogenic Granuloma/ Lobular Capillary Haem angioma. Recurrence can be attributed to incomplete excision, repeated trauma, and failure to remove etiologic factors.[13,14]

DIFFRENTIAL DIAGNOSIS

- Reactive angioendotheliomatosis
- Benign haemangioendothelioma
- Bacillary angiomatosis
- Kaposi Sarcoma
- Angiosarcoma
- Non- hodgkin's Lymphoma
- Congenital malformations
- Angiofibroma
- ngiomatous polyp

Conclusion

Early detection of the pathology and biopsy is necessary to determine the clinical behaviour of the tumour so as to render appropriate treatment. Through this study we have found that it can present at sites other than oral and nasal cavities like hand, face, scalp and extremities, also, extremities of age group can present with Lobular Capillary Haemangioma.

Abbreviations

H-E: hematoxylin-eosin, LCH: Lobular Capillary Haemangiomas, PG: Pyogenic Granuloma, WHO: World Health Organization.

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