Original Article

PRESENTATION AND MANAGEMENT OF VASCULAR ANOMALIES OF THE FACE: AN ANALYSIS OF 126 CASES AT A TERTIARY CARE HOSPITAL

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ABSTRACT

Objective: *To describe the presentation and management of vascular anomalies of the face in the Plastic and Reconstructive Surgery Unit, Hayatabad Medical Complex, Peshawar.*

Meterial and Methods: *This descriptive study was carried out in the Department of Plastic & Reconstructive Surgery, Hayatabad Medical Complex (HMC), Peshawar during a period from March 2009 to December 2012.*

All patients with clinically suspected or diagnostically proven cases of vascular anomalies of the face were included by convenience sampling technique. Patients treated elsewhere and those who did not consent to participate in the study were excluded. Assessment was made by detailed history and clinical examination. Diagnosis of hemangioma was done on the basis of history alone while those of vascular malformation were confirmed by clinical examination and MRI and CT scans. Type of vascular anomaly, location, type of treating modality undertaken and complications encountered were all recorded.

Results: *Out of a total of 126 patients, 55.46% were females while 44.54 % were males. Age range was 3 days to 12 years. There were 89 cases (70.6%) of vascular malformation and 37 cases (29.3%) of hemangioma. Hemangioma was more common in females (56.8%) than males (43.2%). Most common vascular malformations were venous 51.6%, followed by capillary 14.16%. The most common site of involvement was lips (n=41) followed by tongue (n=21). Hemangioma was treated expectantly and oral steroids and surgical excision in residual cases while vascular malformation was managed with sclerotherapy and surgery.*

Conclusion: *Vascular anomalies of the face has varied presentation in the form of hemangioma and vascular malformation. Detailed history and clinical examination should be adopted to diagnose them and proper counseling should be done regarding their recurrence.*

Key words: *Hemangioma; Arteriovenous malformation, abnormalities; Mouth mucosa.*

INTRODUCTION

Vascular lesions in the head and neck region poses significant cosmetic problems for the patient, and can lead to serious life threatening hemorrhage. Vascular anomalies occur as a result of blood vessel abnormalities or endothelial cell proliferation[1]. In the past, there has been confusion regarding the proper nomenclature for vascular lesions. In 1982, Mulliken and Glowacki biologically classified vascular anomalies of the head and neck region into hemangioma and vascular malformation[2]. Later on, in 1996, the International Society for the Study of Vascular Anomalies (ISSVA) modified this classification[3].They subdivided vascular anomalies into (1) tumors including hemangioma, pyogenic granuloma, hemangiopericytoma, tufted angioma and kaposiform hemangioendothelioma; and (2) vascular malformation[4]. Hemangioma is the most common tumors of infancy and childhood, comprising approximately 7-10% of all benign soft tissue tumors[5]. It is more common in white female, in twins and in premature infants[3,6,7]. It is a benign proliferation of endothelial cells and is not frequently present at birth[8]. It has three phases of development: proliferating, involution, and involuted and presenting

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mainly as a red macula, papule or nodule[4]. In some cases, hemangioma may lead to obstruction and compression of surrounding structures, formation of fissures, ulcers or hemorrhages, and functional and aesthetic problems[1,6]. Vascular malformation is a structural anomaly which occurs due to an abnormality of the embryonic development of blood and lymph vessels[9]. It is composed of arteries, veins, capillaries and/or lymphatics[2,3]. They mainly presents as soft tissue swelling which is pulsatile and audible bruit (arterial), compressible (venous) and transillumunable (lymphatic)[6]. Vascular Malformations are divided into two categories: Low-flow and Fast-flow lesions. Capillary, venous, and lymphatic malformations are low flow lesions while arterial and arterio-venous malformations are high flow and are capable of severe hemorrhage with significant morbidity[10]. They are present at birth and unlike hemangioma, do not go through a rapid proliferative phase and they do not involute[2,3,10]. They grow proportionately with the patient growth[2,3]. They frequently involved bone presenting as a radiolucent, multilocular and well-circumscribed image[6]. The treatment of these anomalies depends on the patient's age, and on lesion site and size[6,11,12]. The main modalities of treatment for these benign vascular lesions are sclerotherapy, systemic corticosteroids, and interferon α, laser therapy, cryotherapy and embolization followed by surgical excision[11,12]. The aim of this study was to describe the presentation and management of benign vascular anomalies of the face in our setup and also to relate these data with that found in the literature.

MATERIALS AND METHODS

This descriptive study was carried out at the Department of Plastic and Reconstructive Surgery, Hayatabad Medical Complex (HMC), Peshawar from March 2009 to December 2012. All patients with clinically suspected or diagnostically proven cases of vascular anomalies of the face were included by convenience sampling technique. Patients treated elsewhere and those who did not consent to participate in the study were excluded. Assessment was made by detailed history and clinical examination. Diagnosis of hemangioma was done on the basis of history alone while those of vascular malformation were confirmed by clinical examination and Doppler ultrasound, MRI and CT angiography in selected cases. Additionally the essential work up was done in patients undergoing surgical excision of the lesion and reconstruction of the defect. Type of vascular anomaly, location, type of treating modality undertaken and complications encountered were all recorded. Follow-up consultations were planned at two weeks and then 3, 6 and 12 months after the end of treatment and thereafter yearly. Patients were examined by the surgeon and photographs of the lesions were taken.

The data were analyzed through SPSS version 10 and various descriptive statistics were used to calculate frequencies, percentages, means and standard deviation. The numerical data such as age and duration of hospitalization was expressed as Mean ± SD while the categorical data such as the types of vascular anomaly, body area distribution, interventional procedures employed and complications observed were expressed as frequency and percentages.

RESULTS

Out of a total of 126 patients, 70 cases (55.46%) were females and 56 cases (44.54%) were males. Age range was 3 days to 12 years. There were 89 cases (70.63%) of vascular malformation and 37 cases (29.37%) of hemangioma. Hemangioma was more common in females (56.8%) than males (43.2%). Slow flow and fast flow lesions were found in 83.8% and 15.7% cases respectively. Most common vascular malformations were venous (51.61%), followed by capillary (14.17%). Details are given in Table-1.

Sites of involvement in decending order of frequency were lips (32.53%) followed by tongue (16.66%). Details are given in Table-2.

Hemangioma was treated by oral steroids in 25 cases (67.56%) and surgical excision in 12 residual and complicating cases (32.43%). Among the 89 vascular malformations, Combined modalities of Sclerotherapy or Embolization with surgical excision were carried out. The details of treatment modalities in vascular malformations are given in Table-3.

Main complication encountered after treatment

Table - 1: Frequency of vascular malformations

Type of lesion	n	%
Venous	46	51.61
Capillary	13	14.17
Arteriovenous	11	12.36
Arterial	10	11.24
Lymphatic	5	5.62
Lymphatico venous	4	4.50
Total	**89**	**100**

Table - 2: Sites of involvement

Site	n	%
Lips	41	32.54
Tongue	21	16.67
Periorbital	19	15.08
Floor of mouth	16	12.69
Cheek	14	11.13
Forehead	8	6.34
Buccal Mucosa	7	5.55
Total	**126**	**100**

Table - 3: Treatment Modalities

Modality	n	%
Combined approach	68	76.40
Sclerotherapy	12	13.49
Surgery	5	5.61
Laser	4	4.50
Total	**89**	**100**

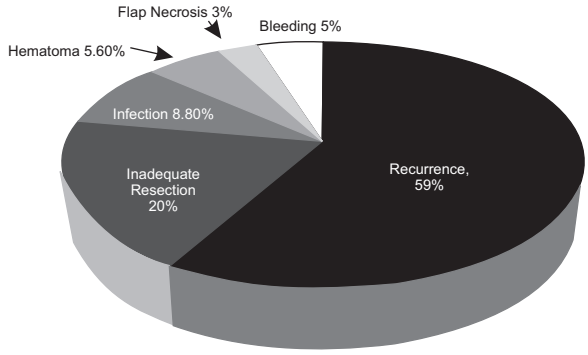

Fig - 1: Complications encountered after treatment

were recurrence (59%) followed by inadequate resection (20%). Details are given in Fig-1.

DISCUSSION

The Mulliken and Glowacki classification[2] of vascular anomalies was used in the present study. Many differences exist in epidemiological and clinical data on these lesions as most of the studies on vascular anomalies do not use this classification[13,14]. The distinction between these two entities is important for the knowledge of the clinical behavior and their management[2,6]. Many clinicians can confuse vascular malformation with hemangioma and misdiagnose it as hemangioma. These vascular lesions were found on the face in 126 patients during this study and that venous malformations (51.61%) and hemangioma (29.37%) were the most common lesions. In literature, there are very few studies on the variable relative frequency of hemangioma and vascular malformation of the

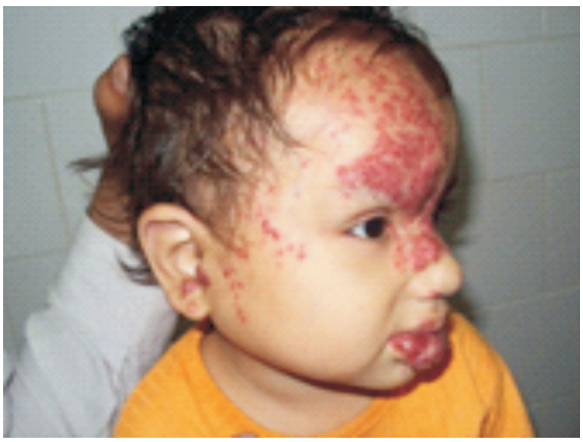

Fig - 5: Capillary malformation of the face in a 3-years old girl

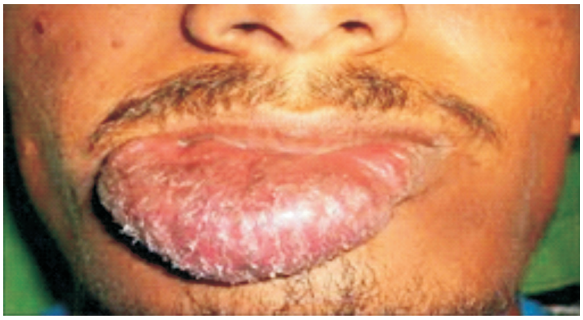

Fig - 6:. Venous malformation lower lip in a 35-years old man

face. In 1994, Corbet et al[15] showed in his study that oral hemangioma represents 2% of the lesions of the oral mucosa in patients with ages ranging from 65 to 74 years. In a similar study on infants by Al-Khateeb et al[16], a relative frequency of 0.9% for hemangioma was reported. Paltiel et al[17] reported that hemangioma was predominant in 53% and vascular malformations in 56% of the cases. In our study, vascular malformation (70.63%) was more frequent than hemangioma (29.31%). Hemangioma of the face was more frequent in females (56.8%) than males (43.2%) in our study. Similar results were also shown by the studies of Donnelly et al[6],Ettinger et al[18] and Jackson et al[19]. Hemangioma is the most common benign neoplasm in infancy, mostly arising between the 1st and the 4th week of life[19]. The studies of Mulliken[2] and Glowacki[20] had shown that at five years 50% and at seven years 70% of the infants respectively had no longer their lesions.

On the other hand, vascular malformation is present at birth with no spontaneous regression and grows proportionately with the patient growth[2,20]. As most of our patients presented at fairly advanced age, the clinical behavior of hemangioma and vascular

malformation may explain the broad age range of these alterations found in our study. Moreover, other anatomic regions were analyzed by previous studies on hemangioma and vascular malformation where functional and aesthetic problems were different than on the face[2,19,20].

Vascular malformation was more frequent on the lips (32.53%), tongue (16.66%), floor of the mouth (12.7%) and buccal mucosa (7%). Barrett and Speight[1] also showed that vascular malformation of the face was more frequent on the lips and buccal mucosa. Hemangioma was also more common on the lips, followed by cheek and Periorbital area. Nguyen et al[21] reported that oral hemangioma was mostly located in the buccal mucosa.

Hemangioma can be diagnosed mainly by sorting out proper history from the parents and by clinical examination in some cases. On the other hand, vascular malformations needs detailed clinical examination and additional investigations like Doppler study and CT or MR angiography[5,17,22]. There are numerous modalities to treat these vascular lesions like sclerotherapy, systemic corticosteroids, interferon α, laser, embolization, cryotherapy, and surgery[11,12]. The choice of management depends on the patient's age, and on the lesion's site and size[11,22]. For bigger lesions, surgery is not indicated due to post-surgical hemorrhages as reported by Sadeghi and Gingrass[23], and in such cases, arterial embolization is satisfactory. Satisfactory results are seen with sclerotherapy in the treatment of small benign vascular lesions like venous and lymphatic malformations[11]. In our study, hemangioma was treated expectantly and with oral corticosteroids (prednisolone 5mg/kg) during rapid phase growth. Surgical excision was used only in residual lesion when there was no spontaneous remission or complicating hemangioma causing obstruction or ulceration. Venous malformations of small size and on extra-oral locations were treated mainly by sclerotherapy using sodium tetra decayl sulphate (STD). Intra-oral venous malformation causing disfigurement, obstruction or bleeding and ulceration were satisfactorily treated by sclerotherapy or surgery. Similarly, arterial and arteriovenous malformation was treated by selective embolization followed by surgical excision in collaboration with interventional radiologist. Main complication encountered after treatment were bleeding (5%), hematoma (5.6%), infection (8.8%), flap necrosis (3%), inadequate resection (20%) and recurrence (59%). These vascular malformations has got high recurrence rate due to their incomplete excision and border ill definition. These result are in agreement with studies carried out by Achauer[8] Sato[12] and Jackson[19].

CONCLUSION

In our set up, vascular anomalies of the face has varied presentation in the form of hemangioma and vascular malformation. These patients should be referred to the surgeons specialized in these diseases. Detailed history and clinical examination should be adopted to diagnose them and proper counseling should be done regarding their recurrence.

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