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A Case Series Of Hemangiomas During A Pandemic (Covid 19): An Institutional Experience

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Abstract

Background & objectives: *Hemangiomas are abnormal proliferations of blood vessels, making up 7% of all benign soft tissue tumors. These lesions are largely congenital, but approximately 20% can be linked to trauma. Hemangiomas are commonly seen in muscles of the trunk and extremities. Diagnostic ultrasound is appropriate for initial assessment for suspected hemangioma although magnetic resonance imaging (MRI) is the investigation of choice.* ***Methods****: A retrospective review was performed of 8 patients who underwent surgery at a tertiary care hospital in 2020 during the COVID 19 pandemic for exploration of soft tissue lesions that were confirmed to be hemangiomas by radiology studies and few by pathological examination.* ***Conclusion:*** *Skeletal muscle hemangiomas are more likely to pose diagnostic problems than superficial hemangiomas. They present as enlarged soft-tissue masses with few symptoms. The most important consideration for differential diagnosis in young children is the distinction from malignant tumors such as rhabdomyosarcoma, synovial sarcoma, or angiosarcoma. Indications for surgical therapy for young children with Intramuscular hemangioma include spontaneous pain, suspicion of malignancy with rapid tumor growth, thrombocytopenia, and cosmetic deformity. In most of the cases MRI helped in establishing the diagnosis.*

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I. Introduction:

Hemangiomas are abnormal proliferations of blood vessels, making up 7% of all benign soft tissue tumors. The true incidence and prevalence of hemangiomas are difficult to calculate, as the majority of lesions are small and asymptomatic. These lesions are mostly congenital, but approximately 20% can be linked to trauma [1].Hemangiomas affecting skeletal muscles, also known as intramuscular hemangiomas (IMHs), are rare and represent <1% of all hemangiomas.[14] They have a predilection for muscles of the trunk and extremities, head and neck region being involved only in about 14% of the cases.[2] Diagnostic ultrasound is an appropriate initial imaging modality for suspected hemangioma although magnetic resonance imaging (MRI) is the investigation of choice [3].The following is a case series of various types of hemangioma presented during the COVID 19 pandemic.

II. Materials And Method

This is a retrospective study conducted in the Department of Surgery, Sri Manakula Vinayagar Medical College and Hospital (SMVMCH), Puducherry. From January 2020 to December 2020, all patients who presented in Department of Surgery with a diagnosis of hemangioma.

Among the 8 patients, 5 patients were female and remaining 3 were males and they belonged to various age groups (3-pediatric, 3-adolescents and 2-adults). The following are the details of all the 8 cases of hemangioma.

CASE 1

A 26 year old male presented with swelling in the left palm for 2 weeks which was associated with pain. No history of trauma. Ultrasound was done, which suggested hemangioma. MRI findings showed a well-defined heterogeneous T2/STIR hyperintense lesion in the palmar aspect of hand in the subcutaneous plane in thenar region with deep extension below the 1st flexor digitorum tendon. Fluid levels noted within the lesion on T2/STIR. Few areas of blooming noted with the lesion with heterogeneous enhancement on post contrast study. Features suggestive of hemangioma. No neurovascular involvement. Hemangioma excision was done and histology showed benign vascular tumour composed of multiple large dilated vessels showing thrombus blood clot and fibrin. Periphery of the lesion shows entrapped skeletal muscle and minimal adipocyte, suggestive of intramuscular hemangioma.

CASE 2

A 17 year old female presented with swelling in the left thigh in the medial aspect for 1 year which was associated with pain. No history of trauma. Ultrasound was done, which suggested hemangioma. MRI findings - a lobulated T2 hyperintense lesion with internal blood-blood levels, seen occupying intramuscular plane anteromedial aspect of thigh measuring 2.5x3.6x4.3cm suggestive of intramuscular hemangioma. No neurovascular involvement. Hemangioma excision was done and histology showed benign vascular tumour composed of multiple large dilated vessels with most of them are thick walled and few are thin walled and lined by flattened endothelium with hemorrhage. Periphery of the lesion shows entrapped skeletal muscle and adipocyte, suggestive of intramuscular hemangioma.

CASE 3

A 2 year old boy presented with swelling over the left scapula for 1 year which was progressive in nature and no history of trauma. On Examination a swelling of size 10x8cm over the scapula which was non tender and soft in consistency. Ultrasound was done, which suggested hemangioma. MRI suggested features of altered signal intensity well-defined lobulated lesion of approximate size 6.0x 4.8 x 3.5 cms (TR x CC x AP) is noted in the left scapular region with epicenter at the level of body of scapula. Lesion appears to be located in the muscular plane, predominantly involving rhomboid major, subscapularis and latissimus dorsi. It appears heterogeneous high signal on T2 and STIR and shows high signal on T1. Multiple intralesional flow voids seen. Multiple arterial feeders are seen from left dorsal scapular artery and left posterior intercostal arteries and suggested benign vascular tumour in the left scapula region. No neurovascular involvement. Excision was done and histology showed lesion composed of lobules of small and medium sized blood vessels along with few thick walled larger ectatic and tortuous vessel with surrounding focal cellular area showing proliferation of plump spindle cells with mild nuclear atypia, suggestive of non-involuting congenital hemangioma.

CASE 4

A 12 year old girl presented with recurrent swelling over the right post auricular region for 10 months which was progressive in nature and no history of trauma. On Examination a swelling of size 3x2cm behind the pinna which was non tender and soft in consistency. Ultrasound was done, which suggested hemangioma. CT showed a well defined heterogeneously dense lesion of size 2.4 x 1.0 cm noted in the right posterior auricular

region with average CT value of +43 HU. No evidence of bony erosion. No Intracranial extension noted. Hemangioma excision was done.

CASE 5

A 16 year old female presented with swelling in the left forearm in the extensor aspect for 6 months which was associated with pain. History of trauma 7 months back. Ultrasound was done, which suggested hemangioma. MRI findings - a lobulated T2 hyperintense lesion with internal blood-blood levels, seen involving the interosseous region proximal forearm measuring 2.3x2.4x4.4cm and another occupying intramuscular plane deep extension aspect middle 1/3rd forearm measuring 2.5x1.6x6.3cm suggestive of cavernous hemangioma. No neurovascular involvement. Hemangioma excision was done and histology showed benign vascular tumour composed of multiple large dilated vessels of which few were thin walled and few thick walled. Periphery of the lesion shows entrapped skeletal muscle and minimal adipocyte, suggestive of intramuscular hemangioma.

CASE 6

A 2 year old girl presented with swelling over the back for 9 months which was progressive in nature and no history of trauma. A well-defined soft tissue lesion, hyperintense in T2/FLAIR and T1 hypointense in the dorsal surface of thoracolumbar region at D9 to D12 level in the subcutaneous plane with foci of STIR hypointensity. Post contrast study shows avid enhancement of few non enhancing areas within. Features Suggestive of Hemangioma. No evidence of Meningocele/ encephalocele. Hemangioma excision was done and histology showed fragments of polypoid tissue with extensive ulceration of the lining epithelium. Subepithelium showing lobules of capillary sized vessels lined by plump endothelium and suggestive of lobular capillary hemangioma.

CASE 7

A 29 year old female presented with swelling in the left paraspinal swelling for 3 years which was associated with pain. No history of trauma. Swelling of size 15x10 cm in the left paraspinal region deep to the muscle. Ultrasound was done, which suggested soft tissue sarcoma. MRI findings - a large vascular soft tissue lesion seen in the paraspinal muscles on the left at D2 to D10 levels measuring 15cm x 6.8cm x 4.2 cm. Dilated tortuous vessel seen within the SOL- suggestive of vascular soft tissue lesion. CT Thoracic Angiogram – Few Large vertically oval tissue mass lesions involving left para spinal muscles and adjacent intramuscular deep to latissimus dorsi muscle with marked increase in internal vascularity and dilated vascular channels within the lesion and intra tumoral AV shunting and early draining veins and feeding artery arising from posterior intercostal artery. Features suggestive of high vascular soft tissue neoplasm.Histology showeda tumour composed of proliferating capillary sized blood vessels lined by plump nuclei admixed with large dilated vessels lined by bland endothelium, splaying of muscle fibers by the proliferating vascular channels and focal adipocyte clusters is also seen, features suggestive of intramuscular hemangioma.

CASE 8

A 14 year old male presented with swelling in the left thigh in the medial aspect which was associated with pain. History of trauma 9 months back. Ultrasound was done, which suggested intramuscular hemangioma. Hemangioma excision was done and histology showed benign vascular tumour composed of multiple large dilated vessels. Periphery of the lesion shows entrapped skeletal muscle and minimal adipocyte, suggestive of intramuscular hemangioma.

III. Results

In the 8 patients, 5 patients were female and remaining 3 were males, predominantly seen in females and belonged to various age groups (3-pediatric, 3-adolescents and 2-adults. Of all the 8 cases presented most of them were seen in the limbs (4 cases), followed by trunk (3 cases) and one case in head. Ultrasound was done for all the cases and hemangioma was suggested. In some cases MRI was done were the diagnosis was difficult.

Among the 8 cases, 5 cases were intramuscular hemangiomas, 2 were congenital hemangiomas and one was a recurrent capillary hemangioma. Excision was done for all the cases and histopathology confirmed the diagnosis. There were no post-operative complications, including bleeding or any functional deficit. All the patients are in our regular follow up and planning to do surveillance of these patients by Ultrasound and clinical examination every six months. If necessary patients will be investigated using Magnetic Resonance Imaging based on the clincal examination.

IV. Discussion

The word hemangioma comes from Greek word, hema – ‘blood’, angeio – ‘vessel’, oma – ‘tumor’. This terminology has been widely used in medical and dental literature. In 80% of cases, hemangiomas occur as

single lesions. More over, capillary hemangiomas have a 3:1 female to male ratio and occur more frequently among Caucasians than other racial groups.[18]

Benign vascular tumors were classified according to the type of fluid they contained as hemangioma (blood-containing lesion) and lymphangioma (lymph-containing lesion) and according to the size of the vascular channels as capillary (small diameter vascular channels) and cavernous (large diameter vascular channels).[19]

Skeletal muscle hemangiomas are more likely to pose diagnostic problems than superficial hemangiomas. They present as enlarged soft-tissue masses with few symptoms. There is rarely any overlying discoloration of the skin, visible pulsation, or audible bruit. Pain is frequent but not invariable, occurring in 60% of cases. In children, this frequency may be higher. Occasionally, function can be affected, or anatomic deformity occurs. Although a history of trauma is given in about 20% of cases.[3] Intramuscular hemangiomas vary greatly in their gross and microscopic appearance, depending on whether they are of capillary, cavernous, or mixed type. [12,13] Intramuscular capillary-type hemangioma is a rare vascular benign tumor of skeletal muscle that can be histopathologically distinguished from the more common vascular anomalies.[5]

Congenital hemangiomas (CHs) are present at birth mostly at their maximal size and lack a growth phase. Most superficial Infantile hemangiomas are evident by 1–4 weeks of age while deep infantile hemangiomas often present at 2–3 months of age.[17] They are categorized as rapidly involuting CH (RICH), non-involuting CH (NICH), or partially involuting CH (PICH) depending on their clinical behavior.[10]

Congenital hemangiomas generally seen as solitary or multiple soft tissue masses with coarse telangiectasia.Usually Congenital Hemangiomas regress but they need a proper follow-up to prevent any ulceration or bleeding from the tumor. NICHs have been reported to grow with age. RICHs are self-resolving and no treatment is actually needed. It is important to rule out other conditions presenting with similar symptoms, such as either infantile hemangioma, which is usually a rapid postnatal growth, or Kaposiform hemangioendothelioma, which presents on histology as spindle-shaped cells, and any other highly vascular malignant tumor, such as rhabdomyosarcoma, angiosarcoma, and dermatofibrosarcoma. Any rapidly growing mass which is firm on palpitation and showing any signs of ulceration with an atypical appearance should be considered for biopsy to rule out any malignancy.

The most important consideration for differential diagnosis in young children is the distinction from malignant tumors such as rhabdomyosarcoma, synovial sarcoma, or angiosarcoma. [7]

Microscopically, the capillary hemangiomas show marked mitotic activity, but it does not mean malignancy. The differential diagnosis from large-vessel-type intramuscular hemangioma to angiosarcoma is an important consideration due to their different treatment and prognosis. The presence of adipose tissue within large-vessel-type tumours is common, and at times may be as conspicuous as to suggest a lipoma. A progressive muscular swelling should always be considered malignant until evidence to the contrary is obtained.[8] Hemangiomas are composed of densely packed endothelial cells that form small capillaries. Infantile hemangiomas have plump endothelial cells and endothelial proliferation.[17]

Ultrasound can be useful in confirming the presence of a mass in doubtful cases or if MRI is unavailable. The first use of Doppler sonography or colour-flow imaging in the evaluation of soft-tissue hemangiomas shows the blood flow within most hemangiomas, except for the arteriovenous type, is so slow that it is below the detection sensitivity of Doppler instruments. Computed tomography (CT) helps to delineate a mass lesion with bony involvement that is seen on plain film well.

MRI remains the modality of choice in the investigation of soft-tissue tumors[6] because of its multiplanar capability and the distinct contrast between normal muscle and a mass. A well-defined but heterogeneous mass is seen with avid enhancement and foci of fat. The fat content was much lower than would be expected with a lipomatous tumor. There was no evidence of loss of signal or blooming to suggest calcification. Calcification is much more consistent with a slow flow lesion, such as a venous malformation.Intramuscular cavernous, venous and Arterio Venous haemangiomas have typical features on MR imaging. As clinical findings are usually non-specific, recognition of imaging appearances aids in detection and arriving at a confident diagnosis. Accurate diagnosis by MR imaging helps to avoid unnecessary surgery.[16]

Surgical excision may be an option for function threatening or life-threatening infantile hemangiomas when medical therapy fails or is not tolerated, but more commonly its role is for removal of residual fibrofatty tissue or correction of scarring after involution. [9,15] Indications for surgical therapy for young children with Intra muscular Hemangioma include spontaneous pain, suspicion of malignancy with rapid tumor growth, thrombocytopenia, and cosmetic deformity.

Additional treatments for vascular malformations are available but rarely used due to side effects and less successful long-term outcomes. Embolization can control pain in unresectable lesions and with surgical excision to decrease blood loss and postoperative recurrence.[1]

Intramuscular hemangioma has a risk of local recurrence, and this rate depends on the adequacy of initial excision. Wide excision is the treatment of choice to prevent local recurrence of hemangiomas, but every patient should be treated individually after evaluating the patient's age, tumor location and invasion, and

cosmetic considerations. Because of the infiltrative nature of Intra muscular Hemangioma, normal muscle must be removed well beyond the gross limits of the tumor to prevent local recurrence. Partial excision cannot be recommended because it is associated with a high risk of local recurrence. In the upper limb, however, the important structures located nearby and the loss of affected muscle are directly related to functional impairment. At the very least, normal functioning must be maintained without any operative sequelae because Intra muscular Hemangioma is a truly benign tumor. Careful preoperative assessment and wide excision could prevent local recurrence, and this is usually curable. The associated reconstruction procedure may be considerable if intramuscular hemangiomas interfere with the function of the extremities. [4,11]

Usually hemangiomas require no intervention. At an early age, spontaneous regression is often seen. Treatment is usually based on the size of the tumour and the rapidity of the progression or if the patient has any disability due to the tumour. Various treatment procedures are followed in treating hemangiomas which include microembolization, radiation, cryotherapy, sclerosing agents apart from surgical excision and recently Erbium lasers have been used.

Propranolol has been used to reduce the size of infantile hemangiomas and it is hypothesized that it works by vasoconstriction and decreased expression of endothelial growth factor. Propranolol can be used to reduce the size of the hemangioma before planning for surgery.

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All authors contributed equally to the manuscript and read and approved the final version of the manuscript.

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Usually hemangiomas require no intervention. At an early age, spontaneous regression is often seen. Treatment is usually based on the size of the tumour and the rapidity of the progression or if the patient has any disability due to the tumour. Various treatment procedures are followed in treating hemangiomas which include microembolization, radiation, cryotherapy, sclerosing agents apart from surgical excision and recently Erbium lasers have been used.