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CASE REPORT

Hypertrophic Osteoarthropathy: A Case Report

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ABSTRACT

Hypertrophic Osteoarthropathy (HOA) or pachydermoperiostosis (PDP) is a rare disorder with classical clinical features of abnormal growth of skin and tissues of the extremities in the form of digital clubbing, swollen, tender joints and facial skin thickening. It can be a primary disease in which there are genetic implications. The disorder can manifest as a secondary disease in cases of congenital heart disease, liver cirrhosis and chronic lung conditions and cancers. A seven-year-old presented to us with joint deformities and digital clubbing with no organ system involvement. The case, with all its diagnostic details are hereby reported so that the clinicians and consultants in training can be mindful of the disease if they come across a patient with similar clinical features. A thorough investigation is to be done to rule out the differentials, as discussed in this report.

Key Words: *Pachydermoperiostosis, Digital clubbing, Joint deformities, Primary hypertrophic osteoarthopathy, HOA, PDP, Genetic hypertrophic osteoarthropathy, Secondary hypertrophic osteoarthropathy*

Abbreviations: HOA= hypertrophic osteoarthropathy, PDP= pachydermoperiostosis, ECHO= Echocargiogram, TB=tuberculosis, LFT's= Liver function tests, ALT= alanine transaminase, AST= aspartate transaminase, ESR= erythrocyte sedimentation rate, CT= Computer Tomography, HRCT= High Resolution Computed Tomography, VEGF= Vascular Endothelial Growth Factor

INTRODUCTION

Hypertrophic osteoarthropathy affects primarily bones and skin and manifests commonly around puberty. Clubbing, arthralgias, periostitis, and subperiosteal new bone growth are its characteristic features. The common physical feature affecting almost all patients is marked clubbing in hands and feet. This clinical finding points towards hypertrophic osteoarthropathy in selected cases and thus not to be ignored. The major familial type is inherited as an autosomal dominant pattern and rarely as autosomal recessive. This condition can be primary or secondary based upon etiology.

CASE REPORT

A 7-year-old boy presented with complaints of pain in the joints. Pain was continuous, mild to moderate in intensity, non-migratory, involving large joints, namely elbows and knees. There were no aggravating or relieving factors, especially with exercise and rest. History of profuse sweating of palms and soles was positive. There was no history of joint tenderness; however involved joints were having limited mobility in both knees and elbows. There was no history of early morning stiffness, rash, changes in nails and skin, backache, skin tightness, accompanying diarrhea, weight loss, mouth ulcers, photosensitivity, cyanosis, palpitations, jaundice, abdominal distention, recurrent chest infections, cold and heat intolerance, petechiae or bruises and h/o trauma. There was no history of TB contact.

On clinical examination, the patient had a weight

of 22 Kg, height of 129 cm, occipitofrontal circumference (OFC) of 52 cm and his MUAC was 14 cm. He had marked clubbing with drum-stick appearance, pallor, shiny skin and sweaty palms. There were joint swellings predominantly of both knees with restricted movements without signs of active inflammation. Rest of the physical examination was unremarkable.

On the basis of history and examination, the following list of differentials were investigated. Tuberculous bronchiectasis, Celiac Disease, chronic liver disease (CLD), cystic fibrosis were considered on the basis of digital clubbing and JIA and acute leukemia were considered due to joint involvement. The patient was investigated on these lines and literature review was done to make a diagnosis of primary hypertrophic osteoarthropathy as a diagnosis of exclusion. Expert opinion from orthopedic, dermatology and rheumatologic departments were also taken to reach the final diagnosis.

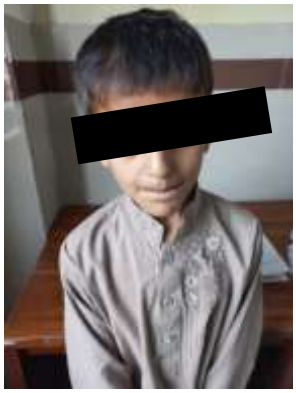

Fig 1: Emaciated patient (Photo reproduced with the consent of the parents)

Fig 2: Digital clubbing in the toes

Fig 3: Digital clubbing in the hands

Fig 4: Generalized muscle wasting and digital clubbing in hand. Note is made of hypertrophic deformity in the left elbow joint of the patient.

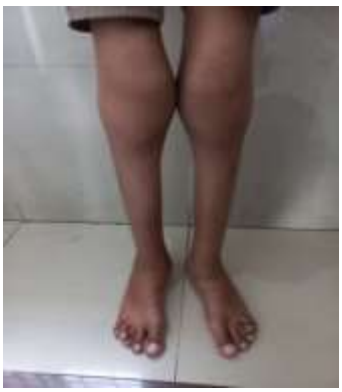

Fig 5: Generalized symmetrical loss of muscle bulk of lower limbs with hypertrophic deformity of bilateral knees and ankles

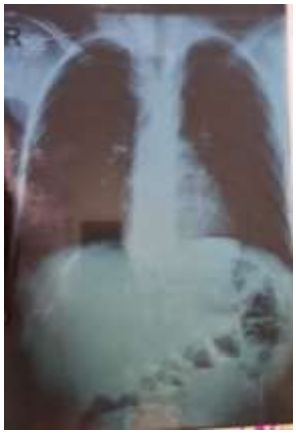

Fig 6: Normal Chest X-ray PA View with no evidence of honey combing

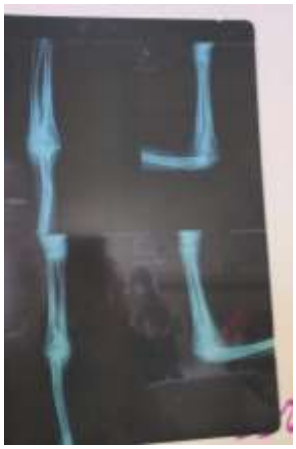

Fig 7: Marked osteopenia involving long bones of humerus, radius and ulna, more pronounced in the peri-articular regions. Mild medullary expansion of proximal metadiaphyseal regions of radius and ulna. Soft tissue haze is appreciated around elbow joint area bilaterally, more marked on the right side, likely due to joint effusion.

DISCUSSION

Hypertrophic osteoarthropathy was first reported in the 1800s. Out of the two types, the primary familial form is called pachydermoperiostosis (PDP). It is hereditary in origin with different clinical manifestations. It predominantly affects male patients with a male to female ratio of 9:1.[2] In this phenotype, the gene encoding hydroxyl-prostaglandin dehydrogenase is mutated. The enzyme expressed by this gene, is responsible for the degradation of prostaglandin. The mutated gene causes high levels of prostaglandin E2, which in turn causes overexpression of vascular endothelial growth factor (VEGF) leading to joint hypertrophy.[3,4]

A number of theories have been given to explain this illness, all pointing to elevated prostaglandin E2 levels, which in turn activates the endothelium and produces unusually large sized platelets which release VEGF. All these factors lead to angiogenesis, edema, and the production of new bone.

Commonly, hypertrophic osteoarthropathy is asymptomatic; with symptoms appearing around puberty progressively. In the idiopathic form, skin features like palmoplantar hyperhidrosis, thick skin folds, acne and seborrhea are reported. Patients usually complain of generalized bone pains. Although joint effusions have been reported, but overt features of arthritis are extremely rare.

Uncommonly, hypertrophic osteoarthropathy is associated with hypertrophic gastropathy, patent ductus arteriosus, inflammatory bowel disease, wide cranial sutures and myelofibrosis.

There is no definitive diagnostic test[5], the presence of facial features with clubbing and evidence of periostosis are main criteria. Without the evidence of secondary causes, it is considered to be primary. Our patient fits in the primary type on the basis of digital clubbing, joint pains, without any features of arthritis and having excluded secondary causes.

Inflammatory markers like ESR and bone remodeling markers like alkaline phosphatase can be used to follow and monitor prognosis of the disease. There is no definitive treatment for the primary disease. Currently, analgesics, non-steroidal anti-inflammatory medications (NSAIDs) and intravenous bisphosphonates are used for symptomatic treatment.[6] Corticosteroids, colchicine, sulfasalazine and methotrexate are also administered where indicated.

Amin et al published a case report of a 20-month-old girl with similar findings [7] and another case is reported at the age of 19 years with features

similar to our index case[8], our case is unique as it was diagnosed at the age of 11 years.

Conflict of interest: None

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