Case Report

A Case Report on Pachydermoperiostosis with Severe Anemia

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ABSTRACT

Pachydermoperiostosis (PDP), commonly known as primary hypertrophic osteoarthropathy, is a hereditary disorder. The primary characteristics are digital clubbing, pachydermia of the face, hyperhidrosis, cutis vertices gyrate, and polyarthritis. This disease typically has an onset during childhood or adolescence and advances slowly for about 10 years. We report the case of a 23 years old male patient with complaints of pain and swelling of both ankle joints, knees, and wrist joints for 7 years. Investigations revealed the patient is also suffering from severe anemia with pachydermoperiostosis. The management of both conditions with suitable therapeutic choices has been done, and the patient is being followed up for the progression of the disease.

Keywords: Pachydermoperiostosis, primary hypertrophic osteoarthropathy, severe anemia, bisphosphonates.

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INTRODUCTION

Pachydermoperiostosis (PDP), commonly known as primary hypertrophic osteoarthropathy or hereditary hypertrophic osteoarthropathy, is a rare genetic condition that was originally identified in 1868 by Friedreich.[1] It is accompanied by pachydermia, digital clubbing, pain, polyarthritis, periostosis, hyperhidrosis, cutis verticis gyrate. There are three types of pachydermoperiostosis: (1) a complete type with periostitis and pachydermia. (2) an incomplete type with bone abnormalities but no pachydermia. (3) a form fruste with significant pachydermia but minimal to no skeletal abnormalities.[2]

CASE REPORT

A 23 years old male patient presented with complaints of pain and swelling of both ankle joints, knees, and wrist joints for 7 years. In the last 7 years, the patient has suffered from recurrent episodes of intermittent fever and headaches that have subsided with the help of medications; pain and swelling were progressively aggravated by activity and relieved on taking rest. Family history is unremarkable.

On examination, thickening of the skin on the forehead with folds [figure 1] and clubbing of fingers were noted. Swollen ankles [figure 2], knees, and wrist joints were observed. There is no focal neurological deficit.

On investigation, the patient's hemogram represents abnormal results with hemoglobin (5.1 g/dl), total leucocyte count (2500 cells/microliter), platelets (1 lakh cells/microliter), and packed cell volume (17.2%) indicating pancytopenia. The liver function test (LFT), thyroid function test, renal function test (RFT), serum electrolytes, vitamin-B12, folic acid levels, serum iron are within normal limits. The analysis of anti-cyclic citrullinated peptides (CCP) (IgG antibodies), rheumatoid factor (IgM), anti-dsDNA antibody, and anti-Sm antibodies all came up negative. The anticardiolipin antibodies (IgG) (IgM) results are negative and the complement components (C3) and (C4) are normal. The results of serum C-reactive protein and anti-nuclear antibodies were positive, the Mantoux test and VDRL results were both negative. There is enough ambiguity about acromegaly to rule out this growth hormone test being performed; the findings are within the normal range.

The radiological findings like magnetic resonance imaging (MRI) of the brain indicate no significant abnormality, an X-ray of the chest and skull anteroposterior (AP) and lateral view is normal. The X-ray of both hands with the wrist joints shows thickening of the cortices of all the phalanges and metacarpals, involving epiphysis and diaphysis. The thickening of the cortex involving the distal radius and ulna (epiphysis and diaphysis) reduces radiocarpal joint space; however, the articular margins are smooth. The bone scan shows increased symmetrical cortical uptake involving all the long bones of the appendicular skeleton (Tram track appearance).

The bone marrow aspiration and biopsy were performed. The peripheral smear results of red blood cell morphology

are normocytic, normochromic cells with few polychromatophills. White blood cells show mild leucopenia with normal differentials. Platelets are adequate. The bone marrow impression features lymphoplasmacytosis. The trephine biopsy features are suggestive of stromal changes with lymphoplasmacytosis.

Based on all the parameters of lab investigations, radiographs, and clinical presentations, the diagnosis is considered as pachydermoperiostosis with severe anemia.

The patient was admitted to the hospital and stayed for 7 days and was transfused with 2 units of packed red blood cells (PRBCs) because the patient was suffering from severe anemia and we managed the complaints with analgesics and NSAIDs. During discharge, the patient is in stable condition and hemogram results are improved; prescribed medications (T Livogen b.i.d., Cap Meaxon plus o.d., T RLVIT o.d., T Sompraz D o.d., T Shelcal XT o.d., T Risedronate 35mg once a week on an empty stomach, T Etoricoxib 90 mg o.d.). After one month, the patient was advised to return to the hospital's outpatient department for a review.

The patient came for review after one month with complaints of pain and swelling in both knees and ankle joints. Lab investigations of hemogram (hemoglobin-9.1 g/dl, PCV-32.1%, TLC–7300cells/cubic millimeter, platelets-2.28 lakhs/cubic millimeter) shows improvement in levels. The physician prescribed medications (T Livogen b.i.d., T Isotretinoin 10 mg o.d., T Risedronate 35 mg once a week on an empty stomach, T Sompraz D o.d., T Shelcal XT o.d., and T Etoricoxib 90 mg s.o.s.) and advised for review after 3 months.

After completion of 3 months, patients came for review. The patient showed improvement in symptoms and hemogram (hemoglobin-10 g/dl, PCV-35.0%, TLC–8000cells/cubic millimeter, platelets-2.94 lakhs/cubic millimeter) indicate little improvement in levels. Advised to continue on same medications, suggested regular follow-ups for every 3 months.

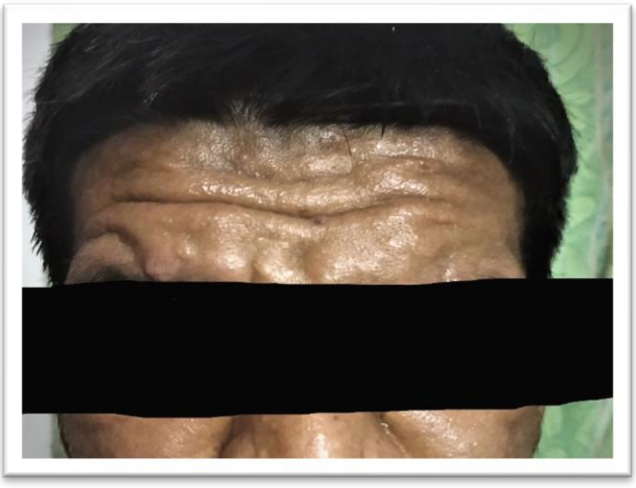

Figure 1: Thickening of the skin on the forehead with folds (Pachydermia).

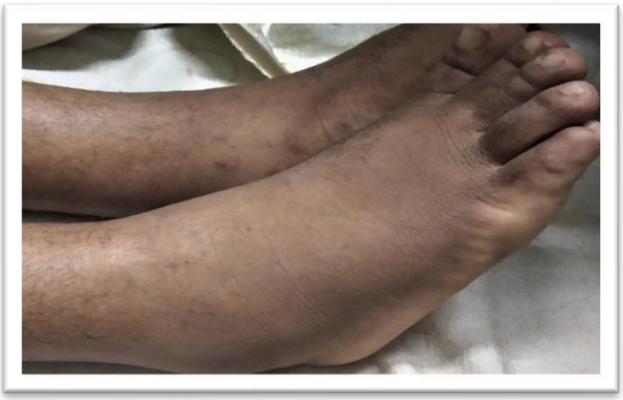

Figure 2: Swollen ankle joint.

DISCUSSIONS

Pachydermoperiostosis (PDP), is a syndrome that primarily affects men. “In most cases, this disease is thought to be inherited in an autosomal dominant pattern with varied penetrance, although it has also been found in cases of autosomal recessive inheritance”.[3] At around 450 BCE, Hippocrates described some of the abnormalities caused by this disease.[4] Clinical symptoms presented by the condition are digital clubbing, periostitis, pachydermia, swollen limbs, hyperhidrosis, and cutis verticis gyrate. Although the pathophysiology is uncertain, an elevated amount of prostaglandin E2 has been hypothesised as a major cause of the upregulation of vascular endothelial growth factor.[5] Pathogenic genes for PDP have recently been identified as HPGD(15-hydroxy prostaglandin dehydrogenase) and 2A1 (SLCO2A1) solute carrier organic anion transporter family member, when mutations in the 2A1(SLCO2A1) gene are detected, life-threatening complication myelofibrosis is suspected.[5] PDP patients with mild anemia have been documented, but no detailed information is available.[6] On the other hand, it is also known that anemia may be accompanied by marble bone disease (osteopetrosis), which is characterized by narrowed medullary cavities, which is similar to the condition seen in pachydermoperiostosis, the presence of PDP may be associated with anemia, which may be due to the same mechanism as that seen in marble bone disease.[6] In the present case, the patient is suffering from severe anemia only hemogram levels are low, but serum iron, vit-B12, folic acid levels are normal, and the patient responded well after blood transfusion followed by oral agents. The diagnosis of PDP mainly depends on clinical manifestations, radiographs, and laboratory investigations. “The general criteria used for diagnosis are Major criteria: pachydermia, periostosis, finger clubbing. Minor criteria: arthralgia, hyperhidrosis, cutis vertices gyrate, gastric ulcer, joint effusion, blepharoptosis, edema, acne, flushing, seborrhea”.[7] In our patient, clinical symptoms, radiological findings, and laboratory tests played the main role in the diagnosis. The therapeutic agents recommended for PDP are colchicine, NSAIDs, analgesics, or a course of oral corticosteroids, however, all of these may be ineffective at controlling

pain.[8] A study using bisphosphonates achieved a substantial improvement in 2 out of 3 patients.[9] The skin complaints were improved with isotretinoin at an initial dosage of 0.5 mg/kg/day.[7] For facial issues, plastic surgery may be beneficial. Our patient responded well to oral retinoids, bisphosphonates, and nonsteroidal anti-inflammatory drugs and showed improvement in symptoms.

CONCLUSION

In our case, the patient developed pachydermoperiostosis with severe anemia. It is a very uncommon condition. We emphasized the management of both diseases and observed the improvement in hemoglobin levels. Treating the symptoms with bisphosphonates, oral retinoids, and NSAIDs in PDP has shown good results, but further follow-ups for observation of the progression of the disease are required.

Consent

Patient written informed consent form was obtained for publication of the case report with images.

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