Research Paper Medical Science

Stone Man Syndrome / Fibrodysplasia Ossificans Progressiva (FOP)

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ABSTRACT

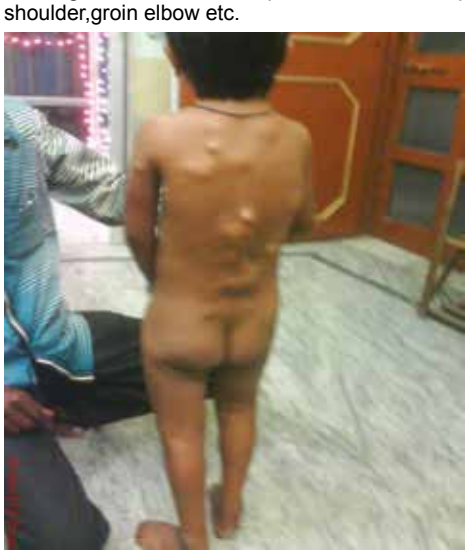
Fibrodysplasia ossificans progressive (previously known as myositis ossificans progressiva) also termed as stone man syndrome (1) is a extremely rare disorder of connective tissue. The disorder is characterized by deformed big toe bilaterally at birth which is the hallmark of the disorder associated with progressive heterotopic ossification of tendon, ligaments, fascia, and skeletal muscle occuring in predictable anatomic pattern . frequently the first sites of heterotopic bone formation occur within fibroproliferative lesion on the upper back and neck.(2) First flare up usually occurs before 10 years of life. Bone growth occurs from top to downwards typically involved in first dorsal, axial, cranial, and proximal region of the body. It doesn't necessarily occurs in the order due to injury caused flare ups. Diaphragm, tongue, smooth muscle,myocardium, extraoccular muscle are spared.(3). Injury caused incorrectly expression of enzyme for bone repair by injured tissue and muscle which causes lymphocytic recruitment and excessive formation of BMP 4 which results in bone formation.(4)

The disease is extremely rare only a few case have been reported in India even Globally. We came across a typical case of FOP in 3.5 year old female child with extensive involvement . extensive involvement at this age is a very rare presentation.

Keywords : FOP, Great Toe Malformation, Injury site exacerbation

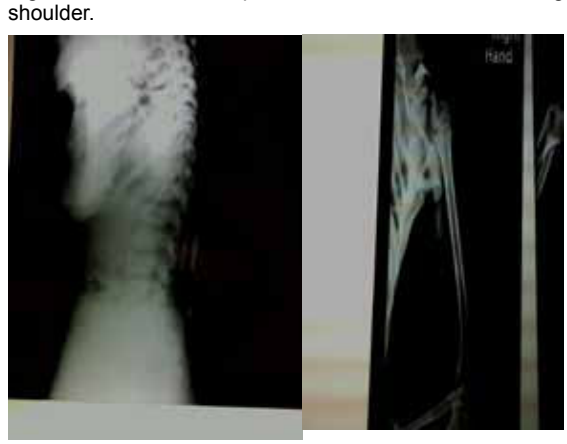
Case Report:

A 3.5 year old female child, third in birth order, having 3 asymptomatic and apparently normal siblings from same parents & 3 more sibling from same father and his I wife presented to us with multiple, hard, painless and painful swellings over back, neck, shoulder, groin since 1.5 year of age, having difficulty in walking , bending neck. H/O abnormal great toe bilaterally since birth and trauma site hard lump formation within 1-2 wks was there. No h/o f ever, bleeding tendencies, skin lesions rash muscle weakness of swelling of joints. No similar illness in family members. o/e child had mild pallor normal speech normal dev milestones examination of the musculoskeletal system revealed multiple bony hard nontender and immobile swellings scattered over nape of neck, interscapular region, shoulder,groin elbow etc.



Gross restriction of movement noted in neck . she had short and deformed big toes of both feet rest of the systemic examination was unremarkable. Routine hematological and biochemical results were found to be within normal range.

X Ray suggestive of heterotopic ossification over cervical region, lower back, and pseudoexostosis was noted in right shoulder.



Child was given supportive therapy after properly explaing nature of ailments to her parents.

Discussion:

Fibrodysplasia ossificans progressiva (previously known as myositis ossificans progressiva) also termed as stone man syndrome (1) is a extremely rare disorder of connective tissue. The disorder is characterized by deformed big toe bilaterally at birth which is the hallmark of the disorder associated with progressive heterotopic ossification of tendon, ligaments,

fascia, and skeletal muscle occuring in predictable anatomic pattern . frequently the first sites of heterotopic bone formation occur within fibroproliferative lesion on the upper back and neck.(2) First flare up usually occurs before 10 years of life. Bone growth occurs from top to downwards typically involved in first dorsal, axial, cranial, and proximal region of the body. It doesn't necessarily occurs in the order due to injury caused flare ups. Diaphragm, tongue, smooth muscle,myocardium, extraoccular muscle are spared.(3).Incorrect expression of enzyme for bone repair by injured tissue and muscle causes lymphocytic recruitment and excessive formation of BMP 4 which results in bone formation.(4)

Best known case of FOP is that of Harry Eastlack(1933-1973). Approx. 700 cases are there across the globe.(5). The disorder is autosomal Dominant (AD allele on Chromosome 2q23-24) with variable expressibilty and complete penetrance. Though most case are sporadic due to spontaneous mutation in gamete. Incidence is around 1 in 2 million(6). Mutation in ACVR-1 gene that encodes for Activin Receptor Type 1(a BMP type 1 receptor) results in change in 206th codon that cause change in Arginine to Histidine in ACVR1 Protien.(7). This causes endothelial cells to transform into mesenchymal stem cell(8). Investigation shows normal mineral profile like S. Ca. and S. P. are within normal range , ESR and Alkaline Phosphatase may be elevated , x rays shows multiple sites heterotopic ossification. Cancer, Juvenile fibromatosis, Progressive osseous hyperplasia may be the differential diagnosis,but malformation of newborn's big toe(Hallmark) & painful fibrous nodule over neck, back, shoulder often after trauma favours the diagnosis of FOP(9). No specific treatment is available till now, Rituximab, systemic Corticosteroids during flare up, NSAIDs Muscle Relaxants may be tried.(10). Squalamine in sharks (antiangiogenic) was under trial but not approved .(11)

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