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CASE REPORT ON FIBRODYSPLASIA OSSIFICANS PROGRESSIVA

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ABSTRACT

Stoneman disease is a rare autosomal dominant connective tissue disorder in which skeletal muscles and other soft tissues undergo ossification. The illness typically manifests clinically as painful swelling of the muscles and connective tissue and usually starts in childhood. Ossification begins at some places at the average age of 4-5 years as soon as the swelling goes down, which typically takes around 6 months or longer. The diagnostic criterion for FOP is congenital abnormalities, which are often seen in the great toes at birth in almost all instances. A kid with FOP will eventually experience difficulties, beginning with aberrant joint and gait movement and progressing to being wheelchair-bound by the third decade of life. We present a case of a 8-year-old male child diagnosed with Stoneman disease. Patient presented with neck and head swelling, and multiple hard bony swellings on back. Also child was unable to rotate head sideways with difficulty in talking. Results of cytology report shows that few neutrophils, lymphocytes, clusters of histiocytes against hemorrhagic background and performed ultrasonography of neck region. The patient was initiated on symptomatic treatment with antibiotics and his family was educated about the disease. Counseling was done, and prevention of trivial trauma was advised.

KEYWORDS: FOP, Autosomal dominant, Connective tissue disorder, Ossification, Long-term.

INTRODUCTION

Fibrodysplasia ossificans progressiva (FOP), also known as Stoneman syndrome or Munchmeyer disease, is a rare autosomal dominant connective tissue disorder. Tendons,

ligaments, skeletal muscles, and other soft tissues of the body exhibit aberrant ectopic ossification, which is indicative of the disease condition. Smooth muscles are not involved in this condition.

The involvement of the ectopic osseous development displays a distinctive craniocaudal, proximodistal, and dorsoventral pattern. Movement restrictions at the affected locations, respiratory failure, and lung infections all make the condition worse and accelerate its progression. Because of the extreme restriction of chest wall movements, cardiac and respiratory failure is the most frequent cause of death in people with this illness.[1]

The prevalence of fibrodysplasia ossificans progressiva (FOP), an extremely rare condition, is roughly 1 in 2 million people globally. There is no specific ethnic, racial, gender, or geographic propensity for FOP, and the age of onset is typically in the first two decades of life.[2]

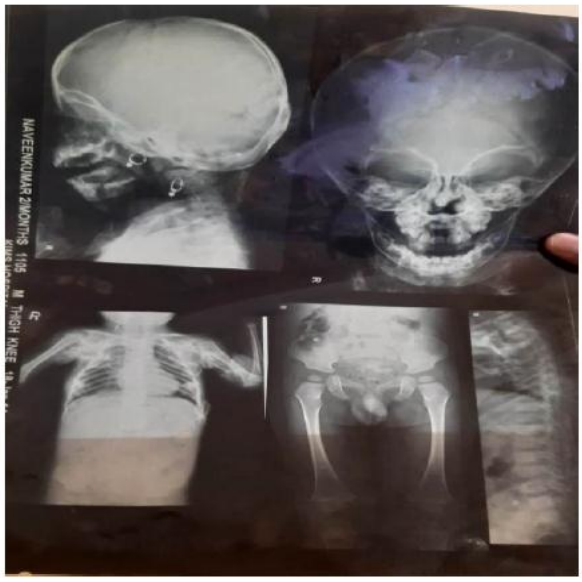
There is currently no cure or treatment for this severe, incapacitating condition. This is the only known medical disorder in which one organ system transforms into another. Victor A. Mc Kusick initially gave the condition a name in 1970. In extreme cases, the body might become immobile as if made of stone, with joints becoming permanently frozen in place. As a result, another name for the disease is Stone man syndrome.[3]

The primary cause is spontaneous mutation in gametes. The disease is caused by a mutation in the ACVR1 [Activin A receptor, type1] gene on chromosome 2 (2q23-24), which codes for a receptor in the BMP signalling pathway. This ACVR1 gene, which causes ossification, is normally deactivated after the fetus's bones are formed in the womb. However, in FOP patients, the gene continues to function. This mutation in ACVR1 causes connective and muscle tissue to transform into a secondary skeleton. This ossification process involves the transformation of endothelial cells into mesenchymal stem cells and then to bone.[5]

CASE REPORT

A 8 year old male patient was admitted in the Orthopedic department with swelling in front region of neck since 25 days. The swelling was insidious onset, initially on right side of neck as a small groundnut in size, soft and gradually progressed to size of a lemon, involving both sides of neck and not associated with fever or throat pain. Patient history revealed that at the age of 4 months, child developed a head swelling and multiple hard bony swellings on back.

Also child was unable to rotate head sideways with a provisional diagnosis of Congenital torticollis. The patient had a history of slip and fall 2 years back. The child had no complaints of difficulty in breathing, difficulty in swallowing, change in voice and noisy breathing. Previously consulted a nearby doctor, were he was diagnosed with Cervical lymphadenopathy and prescribed antibiotics for 5 days. There was no family history with similar complaints. On examination, the patient neck region had 5*4 cm swelling in submental area, extending 2cm to both sides from midline from mentum to upper border of thyroid cartilage vertically. Palpitation revealed no tenderness, hard in consistency and fluctuations of swelling. Results of cytology report shows that few neutrophils, lymphocytes, clusters of histiocytes against hemorrhagic background and no evidence of malignancy in the specimen of submental swelling. We performed ultrasonography of neck region. It shows that few enlarged lymph nodes noted at level of 16 and 11 bilaterally with minimal cellulitis changes, both the lobes of thyroid glands and isthmus appears normal, carotid and jugular vessels appears normal, both carotid sheath structures are normal and submandibular gland appears normal. Laboratory tests shows a discreet increase of the erythrocyte sedimentation rate. The patient was initiated on symptomatic treatment with antibiotics and his family was educated about the disease. Counseling was done, and prevention of trivial trauma was advised.



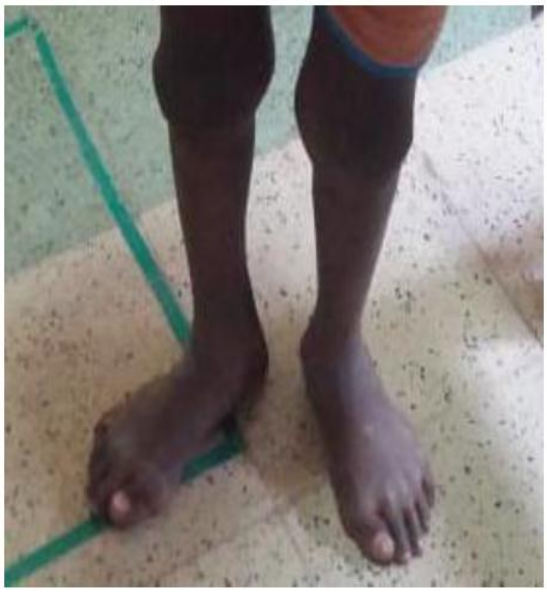


Figure 1: Radiographs of Head and Thoracic region. Figure 2: Bilateral hallus valgus.

Figure 3: Presence of multiple masses on back.

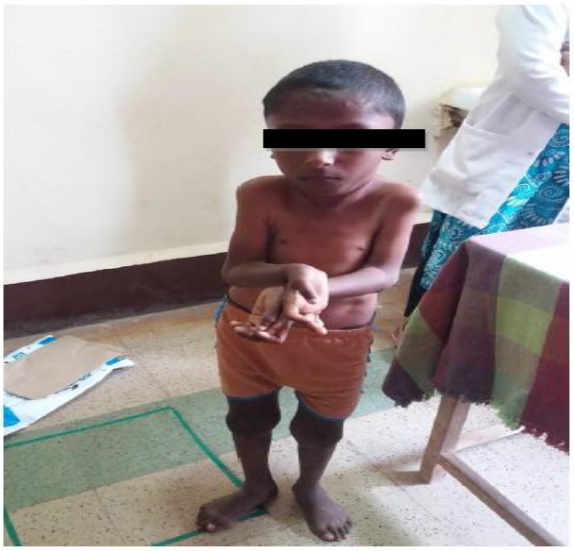


Figure 4: Restricted shoulder.

DISCUSSION

FOP is a rare illness that has no ethnic, racial, regional, or sex predilection and was first recognised in 1648 by Guy Patin as a case who "turned to wood." In a case study of a seven-year-old child with the characteristic symptoms of FOP, Sympson first identified the autosomal dominant inheritance of the disorder. The condition develops postnatally in the first 10 years of life. Progressive ectopic ossification and deformity of the great toes are clinical characteristics of this condition.[5]

In a specific anatomical pattern, heterotopic ossification replaces muscles and connective tissues in the body. It begins in the proximal, cranial, axial, and dorsal regions of the body and progresses to the distal, caudal, appendicular, and ventral regions.[1] This heterotopic ossification is usually complicated by movement restrictions at the corresponding sites of involvement. It may restrict chest movements, resulting in an early death from cardiac and respiratory failure (Thoracic insufficiency syndrome). Short malformed thumbs, clinodactyly, and proximal medial tibial pseudo exostoses are other commonly associated anomalies. It is linked to conductive hearing loss due to middle ear ossification and weight loss due to jaw ankylosis.[2]

Fop is so uncommon that it is difficult to diagnose. Misdiagnosis as cancer or fibrosis is more common and dangerous. This is because performing biopsies as a result of a misdiagnosis can aggravate the growth of the extra bones. However, malformed toes or thumbs in FOP patients can help distinguish this disorder from other skeletal problems. Elevated levels of alkaline phosphatase and bone-specific alkaline phosphatase can also be used to diagnose the disease.

The diagnosis is based on three major criteria. Congenital great toe anomaly, heterotrophic soft tissue ossification, and disease progression in a distinct temporal pattern.[4]

There are numerous potential treatments for FOP, but the unpredictable nature of the disease has made controlled trials difficult to conduct. According to the International Clinical Consortium on FOP (2011), medications are classified into three classes based on the known mechanism of action as it relates to the proposed FOP pathogenesis, experimental or anecdotal experience with the drug, and knowledge of the drug's safety profile. The first category includes medications used to treat acute flare-ups such as inflammatory symptoms (pain and swelling). This class of drugs has generally good results and few side effects (ie, short-term corticosteroids, nonsteroidal anti-inflammatory drugs, or the newer generation such as anti-angiogenic cox-2 inhibitors). The second class of medications includes those that, in theory, will have a positive effect on FOP but have also been used safely for other diseases with limited and well-defined side effects (ie, leukotriene, amino-bisphosphonates, mast cell stabilizer). Drugs in the third class are still being researched, such as signal transduction inhibitors, monoclonal antibodies targeting ACVR1, and retinoic acid receptor gamma agonists.[4]

CONCLUSION

FOP is a rare and disabling disorder for which there is no effective treatment that can cure or slow its progression. Early detection of this condition is critical for genetic counselling, minimising trauma, and preventing painful flare-ups.[2] Specifically, physicians, surgeons, patients, and their families should be educated about the disease, and proper family counselling should be provided. The disease's progressive nature is difficult to stop, but we should delay it as much as possible by preventing muscle trauma, administering disease-modifying agents, and providing long-term physiotherapy to counteract further disabilities that will eventually develop.

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Conflict of interest

The authors declare that there is no conflict of interest.

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