

TREATMENT OF FIBRODYSPLASIA OSSIFICANS PROGRESSIVA: CASE REPORT AND LITERATURE REVIEW

Khalid Al-Ruhaimi, BDS, MSc, Dr. Med Dent, FICS,* A. Lewis Nwoku, MD, DMD, FICS**

يعتبر هذا المرض من الأمراض النادرة التي تصيب النسيج الصنامة. وأن أسباب المرض غير معروفة ومحيرة بعضها يُعزى لأسباب وراثية، وبعضها يُعزى لأسباب تعود إلى النمو والتطور، لذلك فإن أسلوب علاجه أيضاً غير معروف ينتشر هذا المرض في النسيج الصنامة يحدث تكلس غير طبيعي موضع في هذا النسيج وفي مختلف أجزاء الجسم مما يؤدي في نهاية المطاف إلى تكلس أنسجة الجسم، ويصبح المريض مثل قطعة من الحجر. لوحظ أن الإصابة بهذا المرض تزداد بعد الصدمات والإصابة بالرضوض والجروح بما فيها التدخلات الجراحية، حيث إنه حتى وقتنا الحاضر ليس هناك علاج محدد ومقبول لهذا المرض. وعلى ضوء ما هو معروف عن هذا المرض حتى يومنا هذا فإن التدخل الجراحي لإبعاد الأجزاء المتكلسة غير مقبول، بل قد يحدث نكساً ويزيد من شدة حدوث التكلس، لذلك نؤيد الرأي القائل بأنه من الأفضل استبعاد العلاج الجراحي أو العلاجات الأخرى حتى يتسنى معرفة أكثر عن مسببات هذا المرض. وتم عرض حالة مرضية من خلال هذا المقال لتوضيح وتأكيد هذا الرأي.

A case of a patient with fibrodysplasia ossificans progressiva (FOP) is presented. Based on the knowledge that all known treatment modalities for this disease do not offer any cure, we advocate that surgical and/or adjunctive medical treatment would be selective until the nature of the disease is better understood.

Introduction

Fibrodysplasia ossificans progressiva (FOP) or myositis ossificans progressiva is a rare connective tissue disorder that has eluded both medical understanding and treatment. Considerable interest in this anomaly has developed since it had been originally described by Patin¹ in 1692. The occurrence of the disease is sporadic but it may be inherited as an autosomal dominant trait in some of the cases.² FOP is characterized by progressive ossification of the connective tissue that can be detected radiographically. A soft tissue lesion that subsequently ossifies increases with the incidence of trauma,³ including surgical trauma. The unrelenting progressive calcification of skeletal muscles decreases the

mobility of the affected child making him almost like a living pillar of stone. Therapy has been experimental due to lack of knowledge on the basic defects in FOP which causes normal fibrous tissue to become ectopic cartilage and bone.

At this time there is no generally accepted medical treatment. Surgery has been shown to be not only ineffective due to progressive nature of the disease but it aggravates aberrant reossification at the site of operation, causing further loss of function and immobilization.^{2,3} In recent times isotretinoin (13-cis-retinoic acid) has been utilized, but has been found ineffective in preventing the progression of the disease.⁴ The purpose of this paper is to report one case, highlight the error in any decision for surgical interventions, and to caution overly ambitious surgeons.

Received 7/10/91; revised 26/04/92; accepted 2/06/92

*Assistant Professor and Head, Division of Oral and Maxillofacial Surgery, Department of Biomedical Dental Sciences

**Professor, Oral Maxillofacial Surgery, Department of Biomedical Dental Sciences, College of Dentistry, P.O. Box 60169, Riyadh 11545, Saudi Arabia

Address reprint requests to: Dr. K. Al-Ruhaimi

Case Report

A 28-year-old man with FOP attended the out-patient Oral and Maxillofacial Clinic of the Dental College, King Saud University, Riyadh with a history of trismus. His food was restricted to liquid

diet. Physical examination revealed an emaciated, pleasant, intelligent man in no acute distress. His mouth opening was limited to 1 mm due to ossification of ligaments of the left temporomandibular joint and masticatory muscles of that side [Fig. 1]. There was minimal range of motion of his neck, trunk, left shoulder and chest. The involvement of the cervical paravertebral musculature coupled with the immobility of the shoulder, thoracic cage and lumbar region forced him to adapt a characteristic posture of scoliosis in senility [Fig. 2].

He gave a history of stiffness of his trunk after a fall at 10 years of age. He claimed that immobilization of his jaw occurred after a trauma received on the left side of his neck one year before attending our clinic. Previous operation has been performed at the age of 15 years in his left shoulder to relieve a stiff joint but reossification recurred after 6 months. He was receiving no medication. Family history was unremarkable.

The patient was informed that as yet there is no method of curing or treating his disorder. He was advised to keep on a fully nutritious liquid diet and avoid trauma whenever possible.

The patient came back to our clinic six months later after receiving surgical mobilization of his jaw at another hospital. He reported that there was a temporary mobility of his jaws and that he could open his mouth in the first three months after the operation, but thereafter gradual decrease in mouth opening occurred. On examination there was complete relapse of his jaw movement which had recurred after 3 months of surgery.

Discussion

Despite the rarity of FOP, its striking appearance has prompted many researchers to study the diagnostic features and trials of treatment of the disease. The origin and stimulus of the disease are unknown. However, trauma, including surgical trauma, can often provoke onset of the lesion leading to joint immobilization by bony bridges. Reossification 2-6 months after surgical removal of the original ossified mass has been reported.^{5,6} It has been noted that biopsies in patients with FOP are not recommended for two reasons. First, the histologic appearance may be confusing and may lead to misdiagnosis such as fibrosarcoma or fibromatosis. Second, it has been recognized that



Figure 1. Mouth opening of the patient limited to 1 mm due to ossification of the left temporomandibular ligament and masticatory muscles.



Figure 2. A photograph of the patient showing involvement of the cervical paravertebral musculature with the immobility of the shoulder. Note the thoracic cage and lumbar region which forced the patient to adopt the posture of scoliosis in senility.

trauma including surgical operations may aggravate FOP and induce more rapid ossification.^{6,7} Numerous forms of medical treatment have been attempted. These include high-dose etidronate disodium therapy.^{8,9} Diaphosphonates delay mineralization of newly formed bone matrix but this delay is neither definite nor consistent. Dis-

odium EDTA has been used unsuccessfully to reduce ectopic mineralization.¹⁰ Therapy with retinoic acid has also been attempted to inhibit proliferation of fibrous tissue to chondro-osseous tissue. Both of the reported patients had recurrence of their ectopic ossification within two months of treatment.⁴

So far, all known modalities of treatment of FOP have been empirical, and these forms of medical therapy, as well as surgical intervention, have not been beneficial. There is, as yet, no effective therapy available to cure the disease.

In the light of what is known today about FOP, any surgical intervention, or indeed iatrogenic insult is not recommended. Over-zealous surgeons offer only temporary relief to their patients, but bring them greater despair and despondency. In this situation, one must be modest and admits that there is, as in a few other diseases, no known cure yet.

We are, therefore, of the opinion that attempts at surgical intervention and/or medical therapy would be better avoided until such time as the stimulus and origin of the disease is better understood.

References

1. Palin G. In: *Lettres choisies de M. Guy Patin*. Letter of August 27, 1648, to AF. Cologne: P. du Laurens, 1692;5:28.
2. Dixon TF, Mulligan L, Nassim R, Steveson FH. Myositis ossificans progressiva: report of a case which ACTH and cortisone failed to prevent reossification after excision of ectopic bone. *J Bone Surg* 1954;36:445-49.
3. Smith R. Myositis ossificans progressiva: A review of current problems. *Sem Arthritis Rheum* 1975;4:369-80.
4. Crofford LJ, Brahim JS, Zasloff MA, Marini JC. Failure of surgery and isotretinoin to relieve jaw immobilization in fibrodysplasia ossificans progressiva. *J Oral Maxillofac Surg* 1990;48:204-08.
5. Smith R, Russell GG, Woods CG. Myositis ossificans progressiva: clinical features of eight patients and their response to treatment. *J Bone Joint Surg* 1976;58:48-57.
6. Connor JM, Evans DAP. Fibrodysplasia ossificans progressiva. The clinical features and natural history of 34 patients. *J Bone Joint Surg* 1972;64:76.
7. Rogers JG, Geho WB. Fibrodysplasia ossificans progressiva: A survey of forty-two cases. *J Bone Joint Surg* 1979;61A:909.
8. Wood BJ, Robinson GC. Drug-induced bone changes in myositis ossificans progressiva. *Pediatr Radiol* 1976;5:40-43.
9. Rogers JG, Dorst JP, Geho WB. Use and complications of high-dose disodium etidronate therapy fibrodysplasia ossificans progressiva. *J Pediatr* 1977;91:1011-14.
10. Hentzer B, Jacobsen HH, Asboe-Hansen C. Fibrodysplasia (myositis) ossificans progressiva, treated with disodium etidronate. *Clin Radiol* 1978;29:69-75.