

Miliary Osteoma Cutis: Report of a Case after Plant Injury



Arshia Javadizadeh^{1,2*}, Yasaman Naghibzadeh^{1,2*}, Akram Rezaei^{2,3*}, Mazaher Ramezani^{2,3*}

1. Students Research Committee, Kermanshah University of Medical Sciences, Kermanshah, Iran

2. Clinical Research Development Center, Imam Reza Hospital, Kermanshah University of Medical Sciences, Kermanshah, Iran

3. Molecular Pathology Research Center, Imam Reza Hospital, Kermanshah University of Medical Sciences, Kermanshah, Iran



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ABSTRACT

Osteoma cutis (OC) is a rare condition characterized by the presence of bone particles within the skin. One subtype of osteoma cutis is miliary osteoma cutis (MOC), which primarily affects middle-aged women and commonly occurs on the face. Clinical features of MOC include papules and skin-colored hard nodules, similar to milia. In this case, we present a 60-year-old woman with facial skin lesions resulting from a plant injury. The diagnosis was miliary osteoma cutis, and successful surgical treatment was performed.

Introduction

Osteoma cutis (OC) is a rare cutaneous disease characterized by the presence of bone particles in the skin [1]. Wilekens first described OC in 1858 [2]. There are two subtypes of this disorder: primary and secondary. The key difference lies in whether it is associated with a history of skin trauma and lesions [3].

Miliary osteoma cutis (MOC), a subtype of OC, predominantly affects middle-aged women and commonly occurs on the face [3, 4]. While MOC is

generally considered primary OC, it often presents in association with skin lesions [1]. Although the exact etiology of this disorder remains unclear, an arguable hypothesis suggests osteoblastic metaplasia of mesenchymal cells [2]. Clinical features of miliary osteoma cutis include papules and skin-colored hard nodules, similar to milia [1]. Most cases are asymptomatic and are incidentally discovered during radiographic examinations [5].

Some mutations, such as germline or somatic GNAS gene mutations (encoding the G-protein α -stimulatory subunit), are found in peripheral blood or, in fewer cases, in the skin. These mutations can

* Corresponding Author:

Mazaher Ramezani

Address: Molecular Pathology Research Center, Imam Reza Hospital, Kermanshah University of Medical Sciences, Kermanshah, Iran.

E-mail: mazaher_ramezani@yahoo.com

be responsible for multiple miliary osteoma cutis (MMOS) [6]. Although treatment is not necessary, it is often performed for cosmetic reasons [2,7].

In this case report, we describe a 60-year-old woman with facial skin lesions due to plant injury. She was diagnosed with miliary osteoma cutis, and a successful surgical procedure was performed.

Case Presentation

A 60-year-old woman was referred to our clinic by a dermatologist due to a stony, hard lesion on her face. Her medical history revealed a journey to Dubai, during which she sustained an injury to her face from a tree branch in a Dubai plant garden. Subsequently, a nodular lesion developed on her facial skin. The patient had a 30-year history of hypertension and a 10-year history of well-controlled diabetes managed through medical therapy. Additionally, she underwent lumbar disc surgery 20 years ago. Her current medications included losartan-H, gloripa, and nortriptyline. An incidental finding of a small asymptomatic uterine polyp was noted. Laboratory data were within normal limits. Surgical excision was performed on the lesion, and histopathological examination confirmed miliary osteoma cutis (Figure 1). Follow-up assessments revealed no other abnormalities. Written informed consent was obtained for this case report.

Discussion

Osteoma cutis (OC) is a benign disorder characterized by the formation of osseous tissue within the dermal layer of the skin [3,8]. Histologically, these dense eosinophilic deposits contain bony spicules, calcifications, and occasionally osteoblasts, osteoclasts, and osteocytes [9]. Clinically, OC presents with lesions that can vary from asymptomatic to papules, plaques, nodules, or miliary lesions of different sizes (ranging from 0.1 cm to 5.0 cm) [9]. In some cases, OC may cause skin discoloration, turning affected areas white or yellow [9]. All these traits can cause cosmetic problems and this is a notable point.

OC is divided into 2 major subtypes [10]. The first one, with a lower prevalence (15%), is primary OC (POC), which has no association with the history of lesions or cutaneous disorders and should be considered after excluding all other reasons [1,9,11]. It can occur isolated or related to metabolic syndrome [9]. The other subtype, which is more common (85%), is called secondary OC (SOC) or acquired osteoma cutis. This subtype usually occurs in association with pre-existing lesions (like chronic acne), inflammation, trauma, nevi, scleroderma, pilomatricoma, dermatomyositis, basal

cell carcinoma, calcification, fibrous proliferation, and venous stasis [2,8,9]. Although chronic lesions like acne can be responsible for about 85% of SOC, in this case, the inflammation resulting from getting hurt by a plant in Dubai's garden can be related to the patient's OC.

The occurrence of OC varies by sex and age. Evidence suggests that OC is predominantly observed in middle-aged women [4]. In our case, a 60-year-old woman likely confirms this trend. However, OC has also been reported in older age groups [8]. Notably, the risk of presenting facial calcified nodules increases with age [11]. Regarding sex-related features, OC tends to manifest on the face in females (as seen in our case) and on the scalp or chest in males [9,11].

Diagnosis of this disorder is mostly based on the lesion's size, consistency, and radiological appearance. Additionally, methods such as endocrinological laboratory tests and X-rays can be useful for excluding systemic diseases [2,6]. However, despite these methods, diagnosis in some cases may be inconclusive [2]. Laboratory tests like CBC, alkaline phosphatase, serum calcium, and serum phosphate are normal in OC, as observed in our case as well [12].

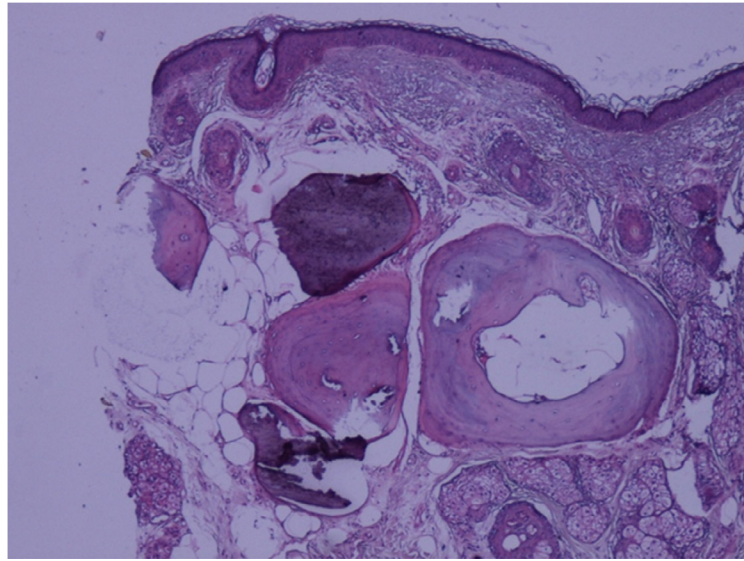
Several theories regarding the pathogenesis of OC have been proposed, with the most probable one being related to osteoblastic metaplasia of mesenchymal cells. Other theories include an embryological disorder involving primitive mesenchymal cell migration or considering osteoma as hamartomas or nevoid tumors. However, these alternative theories are not widely accepted [1,2].

Based on radiographic findings, the pattern of OC can be classified into four groups:

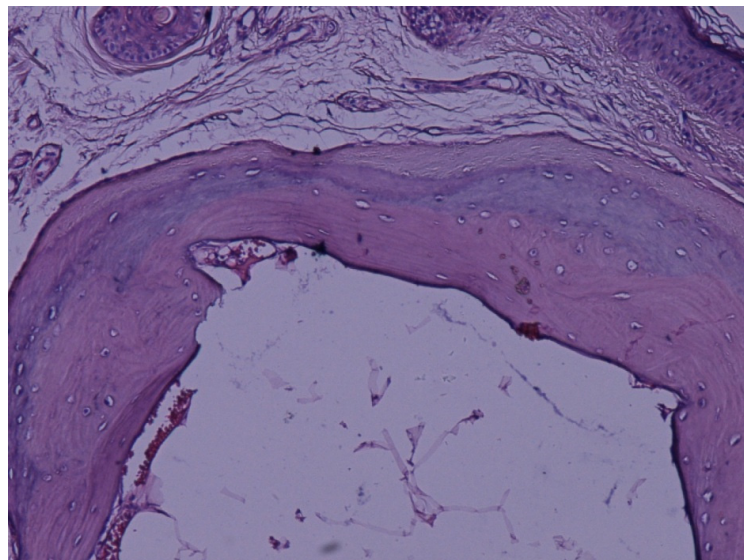
1. A single nodule
2. Plate-like lesions
3. Single or multiple depth lesions (trans-epidermal)
4. Multiple disseminated lesions of varying sizes (multiple miliary or MMOC) [5].

Among these groups, the highest prevalence is observed in multiple miliary OC [5].

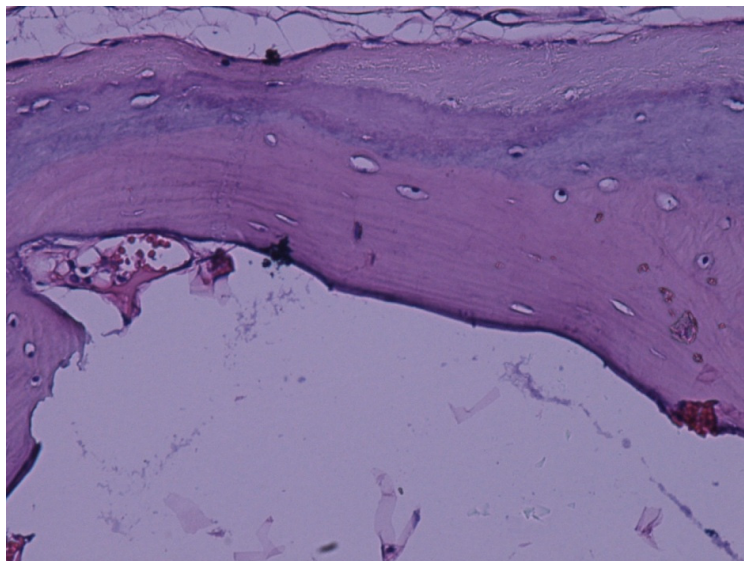
Miliary Osteoma Cutis (MOC), a classification of OC's pattern, is not a common disease and is generally known as primary OC. However, due to its association with acne, it can also be considered a secondary OC [1,2]. MOC lesions typically appear asymptomatic



A



B



C

Fig. 1. Osteoma cuts. Calcifcaton and ossifcaton in the dermis. Hematoxylin-Eosin stain X40 (A), X100 (B), X200 (C) magnifca- tons.

and take the form of papules, affecting various skin areas such as the face (the most common location), trunk, breast, extremities, and buttocks [2]. Histologically, MOC features osteocytes and osteoblasts embedded within lamellar bone [2]. The periphery is the best place to find them, given the presence of mineralized and condensed collagen, although osteoclast and bone marrow features are not uncommon [2].

Treatments for OC most of the time are not necessary to use, except for cosmetic problems [7]. However, different methods are available and include invasive and non-invasive strategies like using retinoin (to remove bone formation), surgical techniques, dermabrasion, YAG laser, carbon dioxide laser, and needle microincision extirpation method [2]. Incidentally, the lesion of the face in our case was removed by surgery, and after that patient got better and had no significant problems.

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Ethical Considerations

Compliance with ethical guidelines

There were no ethical considerations to be considered in this article.

Written informed consent is obtained from the patient for this case report. This case report is according to the rules of the ethics committee of Kermanshah University of Medical Sciences.

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Conflict of Interests

The patient is a relative of one of the authors.

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