Asymptomatic linear skin lesion on the face

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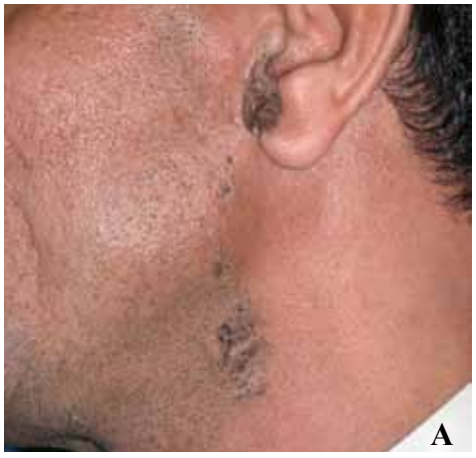
A 41-year-old male patient presented with asymptomatic skin lesions over the left side of the face, from early childhood. At the time of onset, the lesions were localized to the mandibular region only, and then they slowly progressed and increased in number with advancing age to involve a large area on the left side of the face. Few years after puberty, the lesions stopped growing and showed a stationary course. There was no history of discharge. There was no history of any other dermatologic disease and no family history of similar condition.

Cutaneous examination revealed multiple pitted scars and open comedones (dilated follicular openings filled with black, hard plugs) which were distributed in a linear pattern over the left side of face. The lesions extended from sub-mandibular region to pre-auricular area, ranging in size from a few millimetres to a few centimetres. (Fig. 1) Examination of other body areas showed no similar lesions. Hair, nail and mucous membranes were absolutely normal. Examination of the eyes, central nervous system and skeletal system did not reveal any abnormal findings. Routine laboratory investigations including a complete blood count, blood chemistry, and urinalysis were found to be within normal limits.



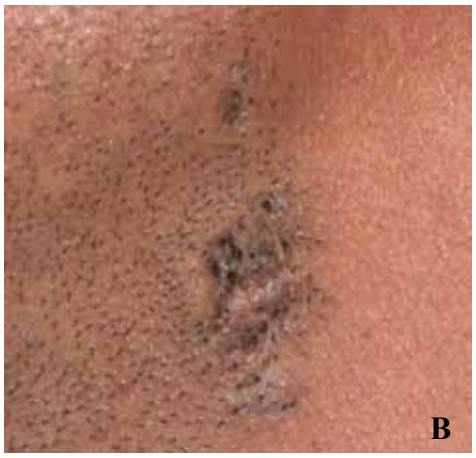


Fig. 1 Lesions distributed in a linear pattern over the left side of face. The lesions extended from sub-mandibular region to pre-auricular area. (A) The lesions show scattered comedones and scars. (B)

What is the clinical diagnosis?

1. Epidermal nevus
2. Nevus comedonicus
3. Nevus Sebaceous
4. Favre-Racouchot Syndrome (Nodular Elastosis with Cysts and Comedones)
5. Familial dyskeratotic comedones

A skin biopsy (6mm punch) was performed from the sub-mandibular lesion including a few comedones. Histological examination showed

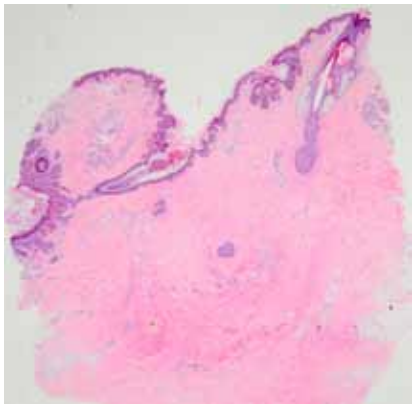


Fig. 2 Histopathology shows closely placed dilated follicular ostia with prominent orthokeratotic plugging (H&E x20)

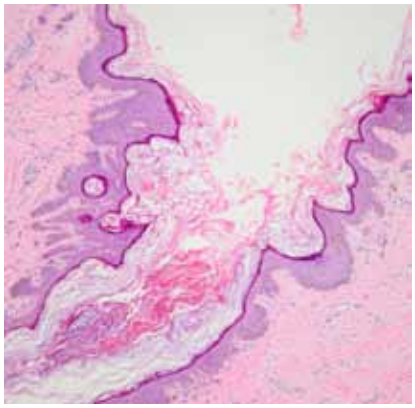


Fig. 3 The follicular walls are lined by stratified epithelium composed of a few layers of keratinocytes with prominent granular layer. (H&E x200)

closely placed dilated follicular ostia with prominent orthokeratotic plugging (Fig. 2). The follicular walls were lined by stratified epithelium composed of a few layers of keratinocytes with prominent granular layer (Fig. 3). Few horn pseudo-cysts were present in some sections that showed mild downward extension of rete ridges. The dermis showed mild superficial lymphohistiocytic inflammatory infiltrate with increased vascularity and mild thickening of collagen bundles.

The diagnosis is

Nevus Comedonicus "unilateral facial nevus comedonicus"

The patient was started on oral isotretinoin at a dose of 0.5 mg/kg/d, and topical adapalene cream once at bed time. After three months of treatment, there was mild improvement with slight subsidence of comedones.

DISCUSSION

Nevus Comedonicus (NC) was first described by Kofmann in 1895. It is an uncommon skin abnormality caused by a defect in the development of the hair follicle comprising of keratin filled pits. The prevalence of NC has been estimated from 1 in 45,000 to 1 in 100,000, with no gender or racial prelidection. In 50% of patients, the condition develops shortly after birth and in the majority of patients lesions appear before the age of 10. Isolated cases of delayed development of NC and NCS at later age have been reported.[1,2]

Clinically, the hallmark finding in this nevus is the presence of comedo-like dilated pores with keratinous plugs. It usually presents with grouped, dilated, plugged follicular ostia in a honeycomb pattern. The plugged ostia contain lamellated keratinaceous material. Their appearance resembles black dots but the material cannot be easily removed mechanically in contrast to acne comedones.[3]

There are reports of NC associated with other skin conditions or ocular abnormalities. Cutaneous associations include ichthyosis, trichilemmal cysts, leukoderma, white hair, Sturge-Weber syndrome and hemangiomas. Ocular abnormalities include congenital cataracts, either unilateral or bilateral. Verrucous changes and squamous and basal cell carcinomas have been known to develop over these nevi.[4-6]

Two types of NC have been identified; the first is non-pyogenic NC with acne-like characteristics and a second type is characterized by formation of

cysts, papules, pustules, and abscesses in various stages of development. The former type is also known as Munro's acne nevus and separated by some authors from NC. It may present as a single or multiple lesions. It may be segmental, interrupted, unilateral, bilateral, distributed in a dermatomal pattern or along the Lines of Blaschko. Lesions are most commonly located on the face, neck, upper arms, chest, abdomen and occasionally involve palms and soles, scalp, female genital area and glans penis.[7,8]

The major histologic features are the presence of large grouped, dilated follicular ostia devoid of hair shafts but filled with keratin layers. At some locations in the bases of the follicular invaginations one may observe singular rudimentary glands, which are not, however, obligatory as they may be absent. Small cysts, cystic invaginations, and occasionally large cysts may be seen. These variable cystic structures are lined by keratinizing squamous epithelium. Hyperkeratosis (epidermolytic hyperkeratosis) and acanthosis of the epidermis may be present but not para or dyskeratosis.[9,10]

Genetic studies suggested that NC may originate either through mosaicism or through influences on the juxta-epidermal mesenchymal tissue during embryogenesis. It was found that fibroblast growth factor receptor 2 (FGFR2) mutation is present in comedonal nevus, but not in the adjacent normal skin, which may be responsible for the recurrent acne over this nevus. There is increased expression of the Proliferating Cell Nuclear Antigen (PCNA), Intercellular Adhesion Molecule 1 (ICAM-1), human leucocyte antigen-DR (HLA-DR), and CD 68, representing a focal clonal defect in the growth regulation of the keratinocytes of the infundibula.[11-13]

Cytokeratin expression in NC is comparable to that in normal skin. Filaggrin, which is usually located in the granular epidermal layer, occurs in the whole epidermis of closed comedones suggesting its role in their development. An increased number of Langerhans cells had been observed by electron microscopy. More abundant tonofilaments in the upper part of the stratum spinosum and numerous keratohyalin granules were also noticed. The arrector pili muscles were incompletely differentiated and demonstrated intracellular glycogen particles.[14,15]

Nevus comedonicus also forms a part of the epidermal nevus syndrome, as mosaicism may be present in the mesodermal layer derivates. Complex syndromes with extra-cutaneous manifestations may be seen. Central nervous system (CNS) involvement includes epilepsy, electroencephalogram abnormalities, and transverse myelitis. Skeletal system abnormalities include scoliosis, hemivertebrae, spina bifida occulta, absence of fingers, syndactyly and supernumerary digits.[16]

NC does not require aggressive treatment, except for aesthetic reasons or in complicated cases. Conservative options include emollients and moisturizer, topical corticosteroids (for inflammatory lesions), keratolytics such as salicylic acid, or 12% ammonium lactate solution. Conservative treatment may improve cosmesis in some patients. Other therapeutic options of NC includes: excision, dermabrasion, cryotherapy, coagulation, extraction of comedones either alone or in combination with previous topical agents.[17-19]

Therapeutic options for patients with inflammatory NC include systemic antibiotics, intralesional corticosteroid injections or oral isotretinoin. There are several reports of inflammatory NC in

which isotretinoin was only minimally effective. Laser treatments with 2,940-nm Erbium: YAG, 10,600-nm ultrapulsed CO2, or 1,450-nm diode lasers have shown improvement in single patients. Erbium: YAG laser treatment is often followed by delayed relapses. In contrast to ablative lasers, the 1,450-nm diode shrinks sebaceous glands and reduces seborrhoea. The combination of 1,450-nm diode laser with 1,550-nm erbium-doped fiber laser has potential for treating NC.[20-21]

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