

Successful treatment of nevus comedonicus with ultrapulse CO₂ laser

Sir,

An 18-year-old girl presented with a linear acneiform eruption since birth. There were no other physical or cutaneous abnormalities and no family history of this disorder. On examination there were comedones, measuring 1 to 3 mm in diameter, clustered in a linear distribution [Figure 1a] on the right side from the chin to the ear. The lesions were associated with atrophy of the epidermis. The biopsy was consistent with nevus comedonicus. The patient had applied topical tretinoin 0.05% and 12% ammonium lactate lotion for one year with no appreciable improvement. In view of the cosmetic disfigurement, we considered the option of treating it with ultrapulse CO₂ laser (ML025CB; 10 600 nm wavelength; frequency 90 Hz; exposure mode –repeat; time on = 10 ms; time off = 10 ms; maximal pulse energy 500 mJ/impulse; maximum energy 15 W; impulse duration 200 μsec). A spot-size handpiece (spot diameter 0.05 to 0.1 mm) was used. The applied energy ranged between 250 and 500 mJ. After administering infiltration anesthesia, four passes were given with removal of the debris with saline and the end point was the appearance of fine punctuate bleeding (level of papillary dermis) [Figure 1b] or visible ablation of the follicular plugs. Posttreatment follow-up was uneventful and there was marked cosmetic improvement in lesions. The follicular plugs/comedone were eliminated except for the epidermal atrophy which was not the primary aim of the laser intervention. After 2 years of follow-up [Figure 1c], except for the epidermal atrophy corresponding to the follicular pathology [Figure 1d] there has been no recurrence

Nevus comedonicus is a rare congenital hamartoma of the pilosebaceous unit, characterized by cystic dilatation and extensive keratotic plugging characterized clinically by groups of comedones.^[1,2] Lesions tend to be grouped along the Voight's or the Blaschko's lines.^[1,2] This condition has largely defied therapeutic intervention [Table 1] with most options leading to recurrence.^[1,2] The medical options rarely



Figure 1: (a) Nevus comedonicus on the right side of the face, (b) Immediately after ultrapulse CO₂ laser showing punctate bleeding, (c) After 2 years of follow up, (d) Epidermal atrophy corresponding to the follicular plugs

Table 1: Treatment options for nevus comedonicus^[1-3]

Topical	Systemic	Surgical/Laser
Tretinoin 0.1% gel	Antibiotics	Surgical Excision
Mometasone furoate	(Erythromycin,	Pore strip.
Tacalcitol	cephalexin	2940-nm Derma K EYL
Tazarotene	sulfamethoxazole	
Ammonium lactate	and trimethoprim.)	Cw CO ₂
lotion	Isotretinoin	Ultrapulse CO ₂

lead to any marked improvement and the surgical options require expertise with equivocal results and long downtime.^[1-4] Recently, Erbium YAG laser^[3] has been used which in comparison to carbon dioxide laser, is known to cause superficial ablation. However, in view of the pathology of nevus comedonicus which shows epidermal invaginations with sebaceous glands up to the level of papillary dermis,^[1] a laser with more ablative depth is necessary.^[4] Considering the safety profile, tissue dynamics and follicular penetration of ultrapulse CO₂ laser in epidermal nevi we used this laser in our case.^[4,5] With ultrapulse CO₂ laser, the energy spreading down the hair follicle produced cavitation and a zone of collagen damage 300 to 400 μ m down the follicle wall^[5] (well beyond the zone of vaporization). This has been associated with excellent tissue healing with minimal thermal damage as the ultrapulse mode has a tissue thermal impact less than the thermal relaxation time of skin.^[2,4,5] Also in nevi with a variable depth-like nevus comedonicus,

it is better to use a ultrapulse CO₂ laser than Erbium YAG laser as the intraoperative hemostasis is better with more efficient ablation.^[2,4,5]

Specifically for nevus comedonicus, a therapy with follicular localization is essential and ultrapulse CO₂ laser has been proven to have a specific follicular penetration.^[4,5] Also, this mode is superior to the continuous wave or super pulse CO₂, which has more tissue damage and has less specificity for follicular pathology than the ultrapulse mode.^[2,4,5]

While results of our case show the benefit of ultrapulse mode, nevus comedonicus may not always respond so favorably, due in part to the variability in their depths of involvement.

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