A Case of Unusual Comedogenesis in Alopecia Totalis

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Sir,

Alopecia areata (AA) is a common cause of non-scarring hair loss. About 10-20% of such patients have alopecia totalis.

Comedogenesis over scalp in association with AA is a rare phenomenon and was first described by Edward J. Ringrose in 1952.[1] Later, two other authors reported the same association sparingly, all suggesting crucial role of terminal hair in drainage of sebum and prevention of preliminary lesions of acne. Hereby, we report a case strongly supporting the hypothesis.

A 19-year-old male with a 3-year history of alopecia totalis came to our department with multiple asymptomatic blackhead-like lesions all over the bald scalp for 3 months. Eyebrows, mustache, and beard area were partially affected by AA but not by comedones. Other hairy sites such as axillae and pubic region were not involved. The patient gave a history of application of various oils and lotions for the same without any improvement.

On examination, numerous closely set open comedones with regrowing and vellus hair were seen all over the scalp [Figure 1]. Grade I acne vulgaris with closed comedones was also noted over cheeks. Erythematous papules and pustules were absent. The patient has no history of atopy or thyroid disorders.

Dermoscopy revealed numerous comedo-like openings surrounded by bluish white structureless areas; however, careful examination also showed yellow dots, few black dots, and occasional dystrophic hair mixed with numerous wispy miniaturized or regrowing vellus hairs [Figure 2].

Histopathology revealed a large infundibular cyst and a dilated plugged infundibulum [Figure 3a]. The wall of the cyst was thinned out to two-cell layer thickness. Terminal hair follicles were reduced in number in the vertical section. Focally, there is a classic anagen-like nanogen hair with peribulbar infiltrate [Figure 3b]. The horizontal section showed obvious peribulbar inflammation likened to a "swarm of bees" [Figure 3d].

He was prescribed oral isotretinoin (20 mg once a day for 2 months) with comedone extraction (once a month). Comedones were easily expressed on extraction. The patient lost to follow-up after 2 months.

Acne vulgaris is common among young adults, yet it does not involve scalp frequently. Comedones are precursor lesions of acne and are considered central to its pathogenesis.[2]

Ringrose and Ekblad in 1952 described a case of acne vulgaris, cystic acne, and milia in a 30-year-old male with AA. He suggested the importance of terminal hair for proper drainage of sebum, provided the pilosebaceous units are functional. With histopathology, he also demonstrated fully functional pilosebaceous units in the regions of AA having comedones and absence of the same in alopecia regions without comedones.[1]

Gach and Humphreys reported a case of AA with soreness, comedones, and pustules over the scalp in 2001.[3] Later, two cases were reported by Sergeant and Holmes in 2007.[4] They emphasized the importance of thick terminal hair over the scalp in keeping the ostium wide open to drain the canal more efficiently. In a functional pilosebaceous unit, desquamated cells from the follicular epithelium are carried to the ostium by the sebum secretion.[2] Hence, thick terminal hair acts as a better "wick" in draining the sebum to the skin surface compared to the feeble lanugo or vellus hair, which explains rare involvement of

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Figure 1: (a and b) Alopecia areata affecting scalp, eyebrows, beard and mustache areas with comedogenesis concentrated over the scalp; (c) close-up view of dense comedogenesis with intermittent white vellus hair

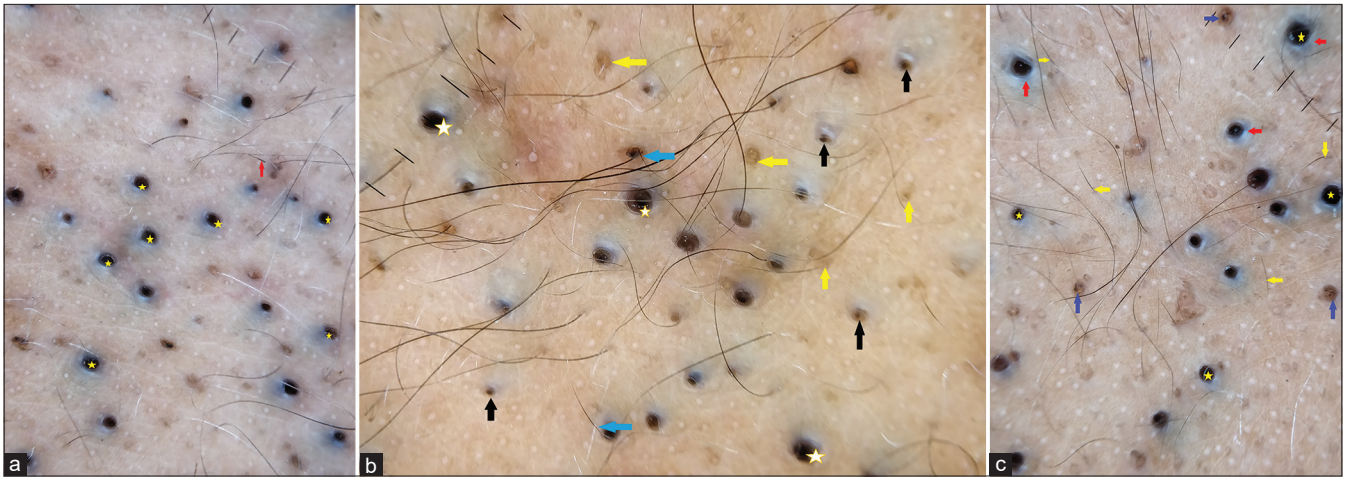

Figure 2: (a) Dermoscopy showing comedo-like openings with gray-brown keratotic plugs (yellow star) almost obscuring the subtle features of alopecia areata-like dystrophic hair (red arrow); (b) open comedones (yellow star), black dots (black arrow), yellow dots (yellow arrow), and vellus hair (blue arrow); (c) comedo-like openings (yellow star) surrounded by bluish-white structureless areas (red arrow). Note few black dots (blue arrow) and numerous regrowing vellus hair (yellow arrow)

scalp and more frequent involvement of face, back, and chest by acne.[4]

AA patients with functional pilosebaceous units lack "wick" effect due to the absence of terminal hair. Androgen-induced seborrhea is another important factor for accelerated comedogenesis in young adults like our patient. Such functional pilosebaceous units with intact follicular canals, however, are not seen in other non-scarring alopecias like androgenic alopecia or telogen effluvium. Hence, this phenomenon is not seen in them.

Although Baral has suggested the role of topical minoxidil in causing comedones,[5] it is possible that minoxidil induces vellus hair growth over the scalp which has "weak wick" effect leading to comedogenesis.

Our patient has had AA since 3 years, but he recently developed age-related hormone-induced seborrhea on the background of fully functional sebaceous glands over the scalp. Also, there was a history of chronic exposure of bald scalp to ultraviolet radiation and application of various quack remedies and oils which might have caused follicular blockade leading to comedogenesis.

Thus, the case was reported for the rarity of its occurrence, re-emphasizing the importance of thick terminal hair as a natural drain for pilosebaceous unit secretions. It is interesting to note that the absence of this terminal hair is central to the pathogenesis of comedones, cysts, and milia, provided the pilosebaceous units are not completely destroyed.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and

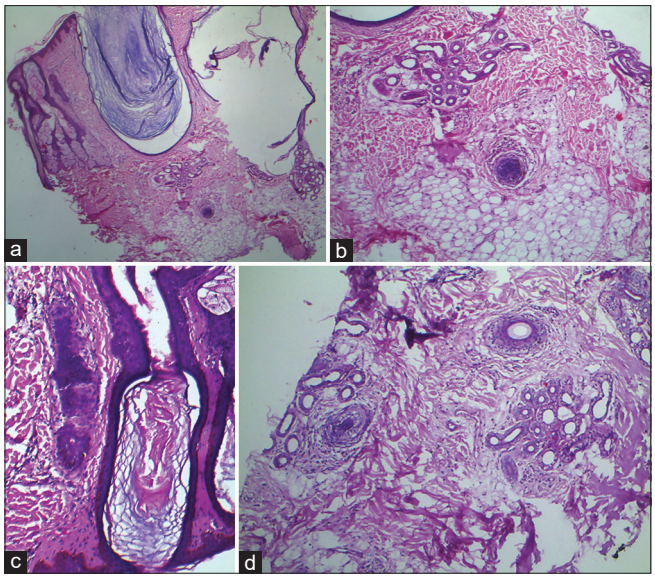

Figure 3: (a) Vertical section showing massive dilatation and plugging of infundibula (H and E, 10X); (b and c) peribulbar infiltrate and follicular germinal unit could have been easily missed in the vertical section (H and E, 40X); (d) horizontal section at dermo-hypodermal level showing peribulbar lymphocytic infiltrate and decreased number of hair follicle units (H and E, 10X)

other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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