

Pruritic Trichostasis Spinulosa: A Rare Variant

Abstract

Trichostasis spinulosa is a disorder of hair follicles characterized by the retention of vellus telogen club hair, leading to the formation of comedo-like lesions. It usually presents over the face and is frequently asymptomatic. We report a 53-year-old female who presented with multiple itchy, discrete, bluish-black, 2–3 mm comedo-like follicular papules and pustules on her breast and lower abdomen for the past 2 years. *In-vivo* dermoscopy showed keratotic plugs with a tuft of hair. Extraction dermoscopy yielded a cystic structure filled with keratin and multiple vellus telogen club hairs. Histology showed a cyst lined by squamous epithelium containing abundant laminated keratinous debris and a vellus hair shaft. Truncal or breast involvement, as seen in the present case, is relatively rare, and can be pruritic, causing significant morbidity due to itching and secondary bacterial infections. Dermoscopy, especially *ex-vivo* extraction dermoscopy, can show diagnostic features and obviate the need for biopsy.

Keywords: Dermoscopy, extraction dermoscopy, microscopy, pruritic trichostasis spinulosa, trichostasis spinulosa

Introduction

Trichostasis spinulosa (TS) is characterized by the successive production and retention of vellus telogen club hair from a single hair matrix within a dilated hair follicle. This leads to the formation of multiple comedo-like lesions. The condition mostly involves the face and is generally asymptomatic.^[1,2] Dermoscopy has emerged as a valuable noninvasive technique for its diagnosis and aids in distinguishing TS from other conditions.^[3] It provides crucial diagnostic information without the need for a microscopic examination or a biopsy. We present the details of a patient with pruritic TS involving the trunk as an atypical site, where the diagnosis was suspected on dermoscopy. *Ex-vivo* extraction dermoscopy helped achieve the diagnosis, which was later confirmed on histopathology.

Case Report

A 53-year-old obese female presented with multiple, itchy lesions on her breast and lower abdomen for the past 2 years. There was no family history of similar lesions. The patient denied the use of any topical applications, rubbing, or waxing. Her past medical or surgical history was also not

contributory. On examination, the patient had a body mass index (BMI) of 35 kg/m². Physical examination revealed multiple discrete, bluish-black, 2–3 mm sized papules present over both breasts and lower abdomen. The lesions had a comedo-like appearance, and a few inflammatory papules and pustules were also present [Figure 1]. Other sites were uninvolved, and mucosal, scalp, and nail examination did not reveal any abnormality. Her general physical examination and routine investigations were also within normal limits.

In-vivo dermoscopy [AM7115MZT Dino-lite Edge 3.0 digital microscope] of the lesions displayed brownish keratotic plugs with protruding hair shafts and crusting in the center. These were surrounded by a reddish homogenous area, some of which displayed coiled dark lines, possibly reflecting coiled hair within the lesion [Figure 2a]. Occasional irregularly radiating vessels could be seen around the inflamed papules [Figure 2b]. Few lesions lacked the surrounding erythematous area but had the signs of hair retention, seen as vellus hair surrounded by follicular plugs, hair tufts (multiple vellus hairs protruding from the opening onto the epidermis) [Figure 2c], and black clods resembling blackheads of acne [Figure 2d].

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Few circle hairs and rolled hairs were also visualized. Based on these findings, a needle extraction of the lesion was attempted, which yielded a cystic structure. *Ex-vivo* dermoscopy of the extracted material (extraction dermoscopy) showed a brown cystic structure filled with keratin and multiple vellus hairs [Figure 3].

The findings were confirmed with a direct microscopic examination of 10% potassium hydroxide (KOH) mount of the extracted cystic structure, which revealed multiple vellus hairs admixed within a keratinous mass [Figure 4]. A punch biopsy and histological examination revealed a dilated follicular infundibulum, lined by squamous epithelium with a prominent granular layer, containing abundant laminated keratinous debris and vellus hair shaft [Figure 5].

Based on the history, clinical, dermoscopic, microscopic, and histopathologic examination, the patient was diagnosed as a case of TS and prescribed topical tretinoin 0.05% cream for a once daily local application along with oral antihistamines. A topical antibiotic was prescribed for local application over pustules, in addition to weight reduction strategies and the avoidance of tight-fitting clothes. The patient reported significant improvement in itching and resolution of a few lesions over 6 weeks. She was subsequently lost to follow-up.

Discussion

TS was first described by Franke in 1901 as “Pinselhaar” (paintbrush hair). However, the term itself was coined by Noble in 1913.^[1] Though its exact incidence and

prevalence are not known, it has been reported to account for 12% of patients attending a dermatology outpatient clinic in Yemen.^[2] TS has a female preponderance with a male-to-female ratio of 1:2. The average age at presentation is 41.6 years (15–79 years).^[3] A positive family history may be present in 17–81% of the patients.^[2,3]

Reported clinical features of TS include blackheads and dilated pores, with visible hair involving the face, interscapular region, or arms. Within the face, the sites involved in decreasing order of frequency include alae nasi, nasal tip, chin, cheeks, forehead, and the perioral area.^[2] Truncal and breast involvement, as seen in the present case, is relatively rare. It could have resulted from repeated friction between the skin and tight-fitting clothing. Obesity may have predisposed the patient to the disease.

There are two main clinical variants of TS. The classical variant typically presents as nonitchy, comedo-like lesions involving the face in elderly individuals. The second variant is pruritic, and is characterized by the presence of numerous itchy, keratotic, pinhead-sized follicular papules, predominantly involving the trunk and upper arms of young adults.^[2,4] Our patient complained of extreme pruritus and typical trunk involvement. As the classical variant is asymptomatic, the majority of the patients do not seek advice.^[2] In contrast, the pruritic variant is responsible for significant morbidity due to incessant itching and secondary bacterial infections, as was seen in the present case. The inflammation associated with itching frequently leads to postinflammatory hyperpigmentation, as was seen in our patient. This can also be a presenting symptom in some.

The diagnosis of TS can be challenging based on a naked eye examination alone. Histopathological examination of skin biopsy is confirmatory, showing follicular hyperkeratosis and multiple vellus hairs enveloped by a keratotic sheath within a dilated hair follicle. This may or may not be associated with inflammation.^[3] However, dermoscopy is a noninvasive tool that can potentially help avoid the need for a biopsy and histopathology for diagnosis. The *in-vivo* dermoscopic observations are

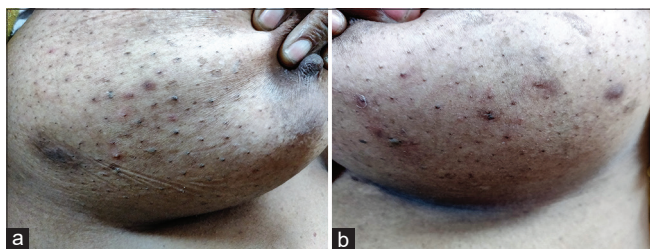


Figure 1: Multiple discrete, bluish-black, 2-3 mm comedo-like papules, inflammatory papules, and pustules over (a) right, and (b) left breast

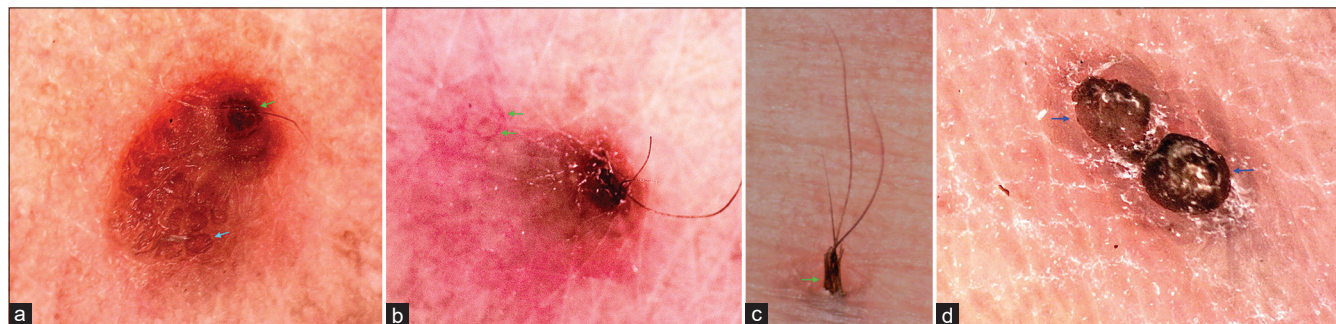


Figure 2: *In-vivo* dermoscopy of the lesions showing (a) brownish keratotic plugs (green arrow) with protruding hair shafts, surrounded by a reddish homogenous area displaying coiled dark lines (blue arrow), representing coiled hairs within [Polarized, x60] (b) occasional irregularly radiating vessels (green arrow) around inflamed papules [Polarized, x60] (c) multiple vellus hairs (green arrow) protruding from the opening onto the epidermis [Polarized, x60], and (d) black clods (blue arrows) resembling blackheads of acne [Polarized, x60]

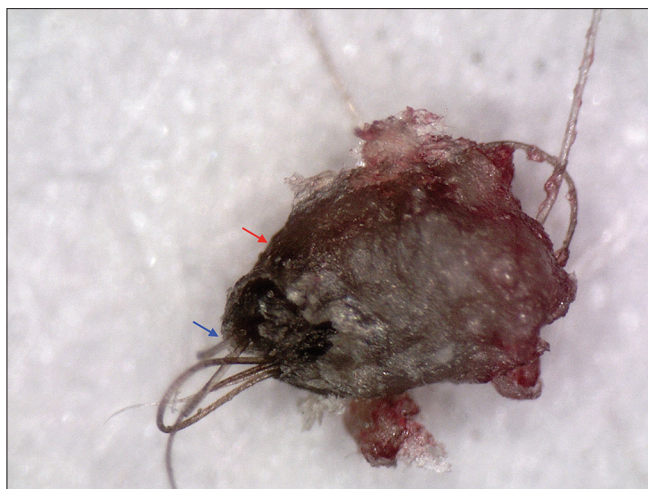


Figure 3: Extraction dermoscopy of the lesion yielded a cystic structure (red arrow) filled with keratin and multiple vellus hairs (blue arrow) [Polarized, x120]



Figure 4: Direct microscopic examination of 10% potassium hydroxide (KOH) mount from the extracted cyst showing multiple vellus hairs within keratinous debris [x100]

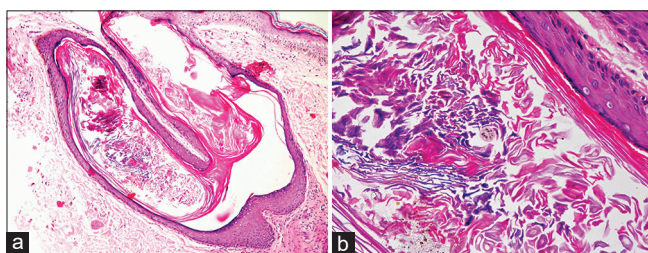


Figure 5: Histological examination showing (a) Dilated follicular infundibulum, lined by squamous epithelium with a prominent granular layer in the lower dermis [H and E, x100] and (b) cyst cavity containing abundant laminated keratinous debris and a vellus hair shaft [H and E, x400]

categorized into two groups: follicular keratosis and signs of hair retention, indicated by vellus hairs surrounded by follicular plugs, hair tuft, and dermoscopic blackhead-like structures. Other dermoscopic features that have been described in TS include circle hair and rolled hair.^[3,5]

However, these are not specific to TS. In addition, novel dermoscopic features were noted in our case, which was a reddish homogenous area adjoining the follicular keratosis or hair tuft. This represents the dermal location of the inflamed cyst. Coiled dark lines within these areas possibly represent coiled hair within the dermal cysts. Irregular radiating capillaries were seen around the inflamed or excoriated lesions. The latter feature is more likely to be seen in pruritic TS, indicating inflammation secondary to excoriation or infection.

Although dermoscopy is a useful tool, the findings may show considerable overlap with other conditions, necessitating further evaluation. To overcome this problem, we used the technique of “extraction dermoscopy” proposed by Daulatabad, *et al.*,^[6] for the diagnosis of eruptive vellus hair cysts. It is an innovative method where the lesion is examined with a dermoscope following needle extraction after topical anesthesia, using due care to keep the contents intact. The contents may be compressed between two glass slides, if needed, before examination.^[6] Extraction dermoscopy of TS in the present case showed a tuft of vellus telogen club hair (vellus-like short, pale, and thin telogen hair), admixed with keratinous debris, encased in a keratinous sheath that opens at the ostium.^[7] These findings are correlated with histopathology showing a cyst cavity containing abundant laminated keratinous debris, and vellus hair shafts. The primary differential diagnoses include eruptive vellus hair cysts (EVHC), pili multigemini, and keratosis pilaris [Table 1].^[8-10]

The treatment of TS is often challenging, and the effects tend to be temporary. Treatment options include topical keratolytics, emollients, erythromycin gel, topical and oral retinoids, and hydroactive adhesive tapes. Laser hair reduction (LHR) using a pulsed 800 nm diode laser and long-pulsed 755 nm alexandrite laser is superior with very low recurrence rates. Two sessions of 800 nm diode laser (fluence 22–40 J/cm²; pulse width 12–30 ms) at an interval of 1–2 months resulted in sustained remission at the end of 2 years in 90% of treated patients.^[11] Long-pulsed 755 nm alexandrite laser (fluence 14–18 J/cm²; pulse width: 3 ms) resulted in more than 50% reduction after two treatment sessions given 4 weeks apart.^[12]

Conclusion

In conclusion, we report a case of pruritic TS in an obese female, confirmed by extraction dermoscopy and histology. The case is being reported to sensitize the clinicians to suspect it on atypical sites and diagnose it noninvasively.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given

Table 1: Comparison of common differential diagnoses of trichostasis spinulosa

Disorder	Trichostasis spinulosa ^[2,3]	Eruptive vellus hair cyst ^[6,8]	Pili multigemini ^[8,9]	Keratosis pilaris ^[8,10]
Pathogenesis	Successive production and retention of vellus telogen club hair from a single hair matrix within a dilated hair follicle	Sebaceous follicles retain multiple vellus hairs, resulting in occlusion and cystic dilation of the follicle	Multiple matrices form hair that emerges through a single canal	Aberrant keratinization of follicular epithelium results in the formation of keratotic infundibular plugs
Sex predilection (M:F)	Males < Females (1:2)	Males < Females (1:1.3)	Males > Females	Equal (1:1)
Age at presentation	Older adults (earlier in females)	Children and adolescents	Middle-aged males	Children and adolescents
Clinical features	Multiple bluish-black, comedo-like follicular papules	Multiple skin-coloured to bluish papules and nodules	Affected area exhibits significantly thicker and fuller hair	Multiple small (1 mm) grey-white, folliculocentric keratotic papules, approximately resembling gooseflesh, with or without perifollicular erythema and hyperpigmentation
Sites of involvement	Face, interscapular region	Chest, limbs, and abdomen	Beard area in adult males and scalp in children	Posterolateral upper arms and thighs
Symptoms	Asymptomatic > pruritic	Asymptomatic	Asymptomatic	Asymptomatic > pruritic
<i>In-vivo</i> dermoscopy	Observations are categorized into two groups: follicular keratosis, characterized by minimal hair retention, and signs of hair retention, indicated by vellus hairs surrounded by follicular plugs, hair tuft, and dermoscopic blackhead-like structures	Bluish dome-shaped papules surrounded by a hyperpigmented halo	Bundles of multiple pigmented hairs of similar thickness emerging from the same follicular opening, surrounded by a peripilar cast and accompanied by perifollicular erythema	Looped and circular hair shafts within follicular openings, surrounded by peripilar casts, perifollicular erythema, and hyperpigmentation
Extraction dermoscopy	Extraction dermoscopy shows a "tuft of vellus telogen club hair." These hair can be seen admixed with keratinous debris encased in a keratinous sheath that opens at the ostium to the outside	Skin-colored to brownish-colored cysts with a bunch of pigmented vellus hairs enclosed within a membrane-bound brown cystic structure, resembling a "bundle of wool"	-	Retention of the coiled nature of hair
Histology	Dilated follicular infundibulum, lined by squamous epithelium with a prominent granular layer containing keratinous debris and vellus hair shaft	Mid-dermal cyst lined by stratified squamous epithelium with the focal presence of granular layer containing keratin and multiple vellus hairs	Multiple hair shafts emerging from the composite dermal papilla, enclosed within a common outer root sheath but separated by layers of the inner root sheath	Triad of hyperkeratosis, hypergranulosis, and plugging of hair follicles

her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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