

# Ingrowing Hair

## A Case Report

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**Abstract:** Cutaneous pili migrans and creeping eruption caused by parasitic diseases may present as a moving linear lesion in skin. The former, caused by a hair shaft or fragment embedded in the superficial skin or middle dermis, is a rare condition characterized by creeping eruption with a black line observed at the advancing end. In exceptionally rare instance, the hair grows inside the skin and burrows in the uppermost dermis, such a condition has been called “ingrown hair.”

We report a 30-year-old Chinese man, who was accustomed to pull or extrude the beard hairs, with 1-year history of slowly extending black linear eruption on his right chin. Cutaneous examination revealed a 4-cm long black linear lesion beneath the skin associated with edematous erythema around and folliculitis on both ends of the lesion. After treatment with topical mupirocin ointment, the erythema and folliculitis improved and 2 hairs of the beard with hair follicles were pulled out from the skin. Two weeks later, another similar black line about 1 cm in length in the skin presented on the prior lesional area, which was pulled out by a shallow incision of the skin and was also demonstrated as a beard hair with hair follicle.

The patient was diagnosed as “ingrowing hair” with multiple recurrences. The lesions recovered after the beard hairs were pulled out. No recurrence occurred in a year of follow-up.

We suggest that “ingrowing hair” is better than “ingrown hair” to describe such a condition. Pulling out the involved hair and correcting the bad practice are its optimal management strategies.

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## INTRODUCTION

Cutaneous pili migrans is a rare condition characterized by a hair fragment or hair shaft moving in the shallow epidermis or dermis, forming an eruption resembling larva migrans.<sup>1–6</sup> Up to date, no more than 30 cases of cutaneous pili migrans have been reported since its first description by Yaffee<sup>7</sup> in 1957, and it has Asian predilection.<sup>1–4</sup> However, we considered that cutaneous pili migrans has been underestimated, because even the present corresponding author and the colleagues had met 4 cases since 2009. Among them, 2 had been previously reported,<sup>1,2</sup> and another 2 whom were diagnosed recently had not been reported yet. Interestingly, there is an exceptionally rare condition previously called “ingrown hair” mimicking the presentations of cutaneous pili migrans, in which the causative factor is a hair growing inside the skin and burrowing in the uppermost dermis rather than a hair shaft moving inside.<sup>3</sup> To our knowledge, only 4 cases published in Japanese literature have been reported (Table 1),<sup>3</sup> and none in English literature have been described. Herein, we report a case and suggest to rename it as “ingrowing hair.”

## CASE PRESENTATION

A 30-year-old Chinese man without any relevant medical histories was referred because of 1-year history of slowly extending black linear eruption on his right chin, which gradually protracted toward the back of neck without any associations. No treatments were administered. A week prior to presentation, the lesion presented with painful erythema around it. The patient usually shaved his beard by blade, and was accustomed to pull or extrude the beard hairs when he had spare time. He denied acne history on his neck. No other family members were similarly affected. Cutaneous examination showed that a 4.3-cm-long black linear eruption beneath the skin located on the right chin, associated with edematous erythema around it and 2 inflammatory papules on both ends of the lesion (Figure 1A). After 1-week treatment of topical mupirocin ointment, the edematous erythema and papules improved excellently, and a hair shaft with its distal end protruding out of the skin was observed which was pulled out with ease (Figure 1B and C). The hair, measured 4 cm in length, was demonstrated a hair shaft with follicles under microscope (Figure 1D). Meanwhile, another hair, about 0.3 cm far from the follicle of the priorly pulled beard hair, was also found which showed a short section protruding out of the skin near the root. By pulling the hair near the root with forceps, a 2.2-cm-long, slippery, straight, black hair was easily removed from the skin (Figure 1C, the white arrow). Then the patient continued with topical mupirocin ointment. Two weeks later, the patient returned and the erythema improved markedly. However, a new black linear lesion about 1 cm in length appeared in the skin in the region of prior erythema (Figure 1E). After a shallow incision of the skin, a 1-cm-long

**TABLE 1.** Summaries of Reported Cases of Ingrowing Hair

Case No	Sex	Age, y	Lesional Location	Length of the Eruption, cm	Length of the Hair, cm	Reference
1	Male	42	Right cheek	6	4.5	3
2	Male	34	Neck	2.5	2.5	3
3	Male	58	Right frontal neck	5	5	3
4	Male	52	Right frontal neck	3	3	3
5	Male	30	Right chin	Multiple (4.0/2.2/1.0)	Multiple (4.0/2.2/1.0)	Present

hair with follicles was extracted from the epidermal burrow (Figure 1F). The patient was given topical mupirocin ointment for a week, and was asked to stop pulling or extruding the beard hairs. Three months later, only mild erythema left behind (Figure 1G). No relapse occurred during 1 year of following-up.

## DISCUSSION

Based on the entities that the black lines were beard hairs with follicles extending gradually rather than hair shafts moving alone, we considered that the present conditions resulted from the hairs growing inside the skin, and we diagnosed them as “ingrown hair” rather than “cutaneous pili migrans.” Considering the hairs had been growing inside the skin until they were pulled out, we prefer to term the present instance as “ingrowing hair” rather than “ingrown hair,” which may be a more appropriate way to describe the disease, and can be distinguished from the condition in pseudofolliculitis barbae in which the hair also grows inside the skin and causes pseudofolliculitis.<sup>8</sup>

Although the exact mechanisms for ingrowing hair remain unknown, we considered that the actions of pulling or extruding the beard might play important roles for the present patient, because the actions might result in possibility of localized inflammation and edema around the follicle, and/or changing the growing direction of the beard hair, that made the hair grow inside the skin possible. While the hair was growing slowly inside the skin, the black lesion was extending gradually, and the length of lesion may be equal to the length of the ingrowing hair (excluding the follicle section). But when the hair follicle is deceased, the hair might move inside the skin as cutaneous pili migrans does. When the hair is growing inside the skin, it may also cause physical stimulation causing possible erythema around. In the present case, a hair shaft extruded out of the skin after the inflammation improved, we thought that the erythema may be a possibly inflammatory reaction stimulated by the hair, and the hair was excluded from the skin as a foreign body finally. Of course, we cannot exclude the possibility that localized infection played a role in some extent for the erythema.

Based on the literature, only 5 cases, including the present patient, have been reported and all were men with an age range of 30- to 58-year old (Table 1).<sup>3</sup> The involved locations included the neck,<sup>3</sup> cheek,<sup>3</sup> and chin. Three occurred on the neck. The results suggested that ingrowing hair always occurs on the area where the beard hairs are distributed, and beard hairs may be the causative hair. All the prior cases were from Japan<sup>3</sup> and the present case is from China. To our knowledge, no similar cases were described in other areas, mimicking cutaneous pili migrans with Asian predominance.<sup>1-4</sup> The reasons of Asian predominance for cutaneous pili migrans

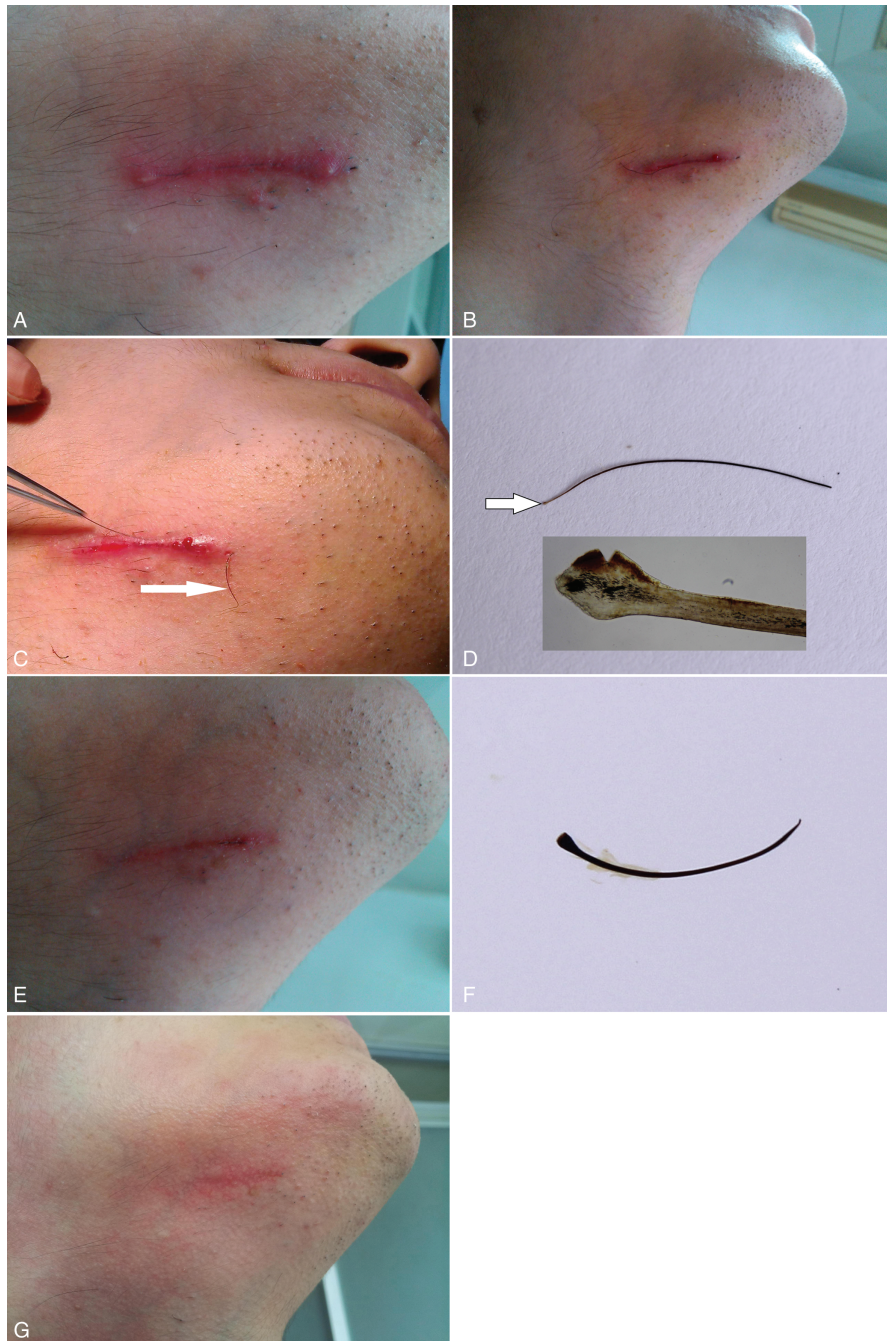
are because that Asian hair, especially the Japanese, has larger diameter with circular geometry, and is harder and straighter than African or Caucasian hair,<sup>9</sup> which may make the Asian hair extend and grow inside the skin easier than that of other population.<sup>1,2</sup> We speculated that the mechanisms for the Asians' predilection of ingrowing hair are the same as they are in cutaneous pili migrans. However, we lack the data of any possible difference of the beard hairs between Asia and other countries.

The differential diagnoses included cutaneous pili migrans, interdigital pilonidal sinus, creeping eruption caused by parasitic diseases, and pseudofolliculitis barbae. Cutaneous pili migrans is caused by hair shaft or fragment, or the pubic hair, and always without hair follicles, showing a painful linear lesion with a moving black line at the advancing end.<sup>1-6</sup> The length of the black line is stable while the lesional length extended gradually. A hair can be pulled out by a shallow incision of the skin.<sup>1-6</sup> But we speculated that, when the follicle is deceased, “ingrowing hair” may become “cutaneous pili migrans.” Interdigital pilonidal sinus, commonly occurring in the barber, is caused by the naked hair shaft or fragment penetrating the follicle and entering the dermis without extending the lesion.<sup>1,5,6,10</sup> The creeping eruption caused by parasitic disease is always caused by nematode larva, in rare condition, subcutaneous migration of a fly's maggot (migratory myiasis), an adult nematode (*Loa loa*, *Dracunculus medinensis*), a trematode larva (*F. gigantica*), or *Sarcoptes scabiei* may be the provoking factors.<sup>1,4,11-13</sup> Its lesion is mobile and tracks sinuously, commonly associated with severe itching without presence of black line.<sup>4</sup> A parasite is always found at the advancing end of the lesion. Pseudofolliculitis barbae is an inflammatory disorder that occurs most frequently in men with a dense and curly beard, presenting as the curly hair tending to curl into the skin instead of straight out the follicle.<sup>8</sup> Persistent irritation caused by shaving or depilation may be the triggering factor.<sup>8</sup> But in rare instance, the hairs come out of and again re-enter the skin causing solid papules with bent hairs inside.<sup>8</sup> Based on clinical features, it is not difficult to make a correct diagnosis for such disorders.

As ingrowing hair is caused by a hair growing inside the skin, extracting the hair and correcting the bad habit may be its optimal management strategies. The present case is notable because of multiple ingrowing hairs and recurrent lesions. To the best of our knowledge, no similar case had been reported previously.

## CONCLUSION

Ingrowing hair is a rare cutaneous disease caused by hair growing inside the skin and characterized by slowly extending black linear lesion beneath the skin, the length of the lesion is



**FIGURE 1.** The presentations of ingrowing hair. A 4.3-cm-long black linear lesion beneath the skin located on the right chin associated with edematous erythema around and 2 inflammatory papules on both ends of the lesion (A). The folliculitis improved excellently after treatment with topical mupirocin ointment for a week, and a hair shaft with its distal end protruding out of the skin presented on the lesion (B). A hair (grasped by the forceps) (C) with hair follicle (D, the white arrow; the inset showing a closer view of the hair,  $\times 100$ ) is easy pulled out; the second hair shaft (C, the white arrow) with its follicle in skin is pulled out from the skin. A new black linear lesion about 1 cm in length appeared in the skin in the region of prior erythema 2 weeks later after pulling out of the prior beards (E), showing hair shaft with hair follicle (F). Mild erythema left behind in 3 months of follow-up (G).

always equal to the length of the hair except that inflammatory reaction occurs. It may involve the cheek, chin, and neck, and may be multiple or recurrent. Pulling out the hair and correcting the bad habit are its optimal treatments.

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