

Post hair removal folliculitis; a clinicopathological evaluation

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Abstract

Folliculitis refers to the process by which a hair follicle becomes inflamed. This has a number of aetiologies, complications and clinical implications. Hair removal is a common cause of folliculitis. People who make use of depilation techniques are at an increased risk of developing folliculitis. Should they have other factors that further depress their immunity, complications are more prevalent. These include spread of infection, the formation of furuncles, permanent scarring, hyperpigmentation and the destruction of hair follicles. This takes considerable psychological toll on the involved individuals. In order to prevent these complications from arising, as well as ensuring full recovery, it is imperative that treatment given is taken for the prescribed duration and in the correct form. Antibiotics are the mainstay of treatment when folliculitis is due to *Staphylococcus aureus* infection. In severe, recalcitrant cases especially, a dermatologist should be consulted to ensure optimal care. The safest way to prevent this condition from developing is making sure cleanliness is a priority, both regarding any tools used as well as the condition of the skin prior to subjecting hair follicles to any particular treatment.

Keywords: Folliculitis, Hair Removal

Introduction-What constitutes a hair follicle?

Hair exerts several functions in mammals, of whom it is a primary characteristic. Among these, there are thermoregulation, proprioception, physical protection, as well as social interaction. It plays a major aesthetic role in humans as opposed to the intrinsically

necessary role it plays in cats, for instance, when it comes to scaring off predators (1).

The hair follicle, a skin appendage located deep in the dermis is in fact one of the most delicate complex organs in the body. The pilosebaceous unit of a hair follicle is composed of the follicle itself along with an adjacent sebaceous gland and erector pili muscle. Sebaceous glands are holocrine

glands, especially numerous in certain areas of the skin such as the face, scalp, chest and back. These glands open directly onto the hair follicles in most instances, excluding areas like the lips, where they instead empty directly onto the mucosal surface because the lips do not harbour hair follicles (2). There are three different phases of the hair growth cycle, these being the anagen (growth) phase, the catagen (transitional) phase and the telogen (resting) phase (3).

What is folliculitis?

Folliculitis refers to the process by which hair follicles become inflamed. While this condition is oftentimes self-limiting, prompt recognition and treatment are necessary in order to improve the quality of life of affected patients (4). Usually, folliculitis is caused by a superficial or deep bacterial infection of the hair follicle. However, this does not exclude the possibility of infection by fungal species like *Malassezia* yeasts or even viruses, such as Herpes Simplex virus (5).

Folliculitis affects the skin around the respective hair follicles, usually leading to a tender inflamed pustule (5). There are two types of folliculitis; superficial- affecting only part of the follicle, as well as deep which occurs when the whole hair follicle is damaged. Symptoms vary depending on which type of folliculitis and its severity (6). Bacterial folliculitis is the most common superficial form, mostly arising due to Staphylococcal infections, leaving the skin itchy, with small pustules (7).

Folliculitis decalvans (FD) is a rare condition leading to chronic inflammation of hair follicles. This classically presents as

peripheral pustules surrounding an expanding patch of alopecia. Pruritus and pain may also occur. FD results in follicular destruction and permanent hair loss. The mainstay of treatment is antibiotic therapy, as the chief causative agent is most commonly *Staphylococcus aureus* (7).

Who can get folliculitis?

Bacterial folliculitis can affect children and adults alike. Most forms do not have a predilection for race, age and sex however some do. Factors which predispose to folliculitis include frequent hair removal practices, be it shaving, waxing or other forms of epilation. Tight clothing might also cause an abrasive environment, leading to friction which irritates the hair follicle (8). The use of topical corticosteroids can also predispose to bacterial folliculitis due to systemic immunosuppression (9).

Hot tubs or pools that are inadequately cleaned should be avoided as they increase the risks of developing folliculitis (9). This may predispose to what is known as a “hot tub rash”. In this case the culprit organism is *Pseudomonas aeruginosa* causing a *Pseudomonas* folliculitis. The latter is characterized by follicular papules, vesicles and pustules which may be crusted. These sorts of lesions preferentially affect areas covered by swimwear, such as the buttocks and usually spare the face, neck, soles and palms (10).

Why hair removal?

Hair removal practices, being so customary, especially in certain areas of the world, are

one of the leading causes of folliculitis. In today's world, the list is quite extensive, ranging from shaving, plucking, depilatory creams, hot waxing, threading, electrolysis as well as laser hair removal (11). Although some methods might be preferred over others due to the pain tolerance level of the individual as well as the cost, easily accessible means of hair removal like waxing are used much more commonly, when compared to electrolysis. The risk of folliculitis with waxing is much higher, however, than with other forms of hair removal (12).

Among the issues that can arise due to hair removal there is skin inflammation, minor burns, scarring as well as hair follicle infections. If folliculitis isn't treated adequately, it can also result in permanent hair loss and scarring (12). If one is prone to folliculitis, laser hair removal can help prevent future outbreaks. On the other hand, practices like shaving with a blade, as well as waxing predispose to folliculitis much more. Waxing is in fact discouraged in patients at high risk or suffering from recurrent bouts of folliculitis (13). Given that different hair removal practices have different risks for folliculitis, one should weigh the pros and cons of every method before complying to any one in particular (14).

A rather specific process by which electric current is used to remove hair roots or small blemishes on the skin is called electrolysis (14). The latter is a hair removal treatment carried out by a trained electrologist which destroys the hair follicle permanently, thanks to a thin wire passed into the hair follicle under the skin surface. When performed safely by a trained electrologist, this process confers more permanent results than laser or waxing treatments. Folliculitis can also result

as a complication of this painful and time-consuming procedure. This non-infectious type of folliculitis arises due to the fact that hairs start to regrow after being removed, resulting in an irritated hair follicle and surrounding inflammation (15).

Management of post hair removal folliculitis

Firstly, preventative measures should be taken in order to minimise the risks of developing folliculitis after hair removal, regardless what the method opted for is. These measures include regular exfoliation (16).

In physical exfoliation, a coarse brush or washcloth, often together with a scrub is used to slough off dead skin cells as well as other debris (16). Chemical exfoliation uses a gentle chemical exfoliant like salicylic acid that can do the same thing without abrading the skin so much. This might reduce the risks of getting folliculitis in the long run, as through exfoliation the hair follicle is getting rid of the excess sebum and dirt, both of which are wonderful substrates for bacteria and other micro-organisms. Cleansing is also important, both before and after epilation (17). If one carries out rigorous physical activity after hair removal, it is imperative to cleanse again within an hour of this (18).

Apart from the state of the skin follicles before the procedure, it is also worthwhile focusing on the method and tools used to shave, as these too can play a major role in avoiding folliculitis. Having clean tools, shaving with a sharp, clean blade and never sharing razors with anyone else is crucial to avoid unwanted consequences. It is also useful to shave in the direction of hair growth,

after applying shaving cream or gel. A razor should be stored in a dry area, and not in the shower, where it can accumulate bacteria and even get rusty, which further increases the potential for infection (18).

The treatment of post hair removal folliculitis depends on the extent and spread of the inflamed hair follicles, as well as the severity. Certain types of folliculitis may need more aggressive treatment regimens while others might resolve spontaneously (19). If folliculitis is mild, antiseptic cleansers can be used to clean the skin and warm towels can be applied to irritated skin to soothe the discomfort. In more severe forms of folliculitis, oral antibiotics may be needed to treat the condition. Topical antibiotics may also be used (20).

Superficial folliculitis normally improves within 7 to 10 days. If no improvement is seen within this time period, one should reach out to a doctor. In the case of deep folliculitis, medical intervention is often required, and these patients should be referred to a dermatologist. Most cases may be treated with an oral anti-staphylococcal antibiotic such as flucloxacillin, or if penicillin-allergic, a tetracycline. In the case of severe pain or itching, NSAIDs or antihistamines can be prescribed. Antibiotics and other medications may not clear up chronic cases of folliculitis. If the latter is ongoing and especially more so in an acute flare up, hair removal should be avoided. Although laser hair removal may prevent folliculitis from developing, it cannot be used to treat it (21).

Apart from treating the infection while it is rampant, one should also make sure to minimise exposure to other harmful practices that might hinder skin healing. It is imperative

to not touch or pick at pustules, use fresh towels every time the face is washed and not share towels with anyone else. Perfumed products should also be avoided on the affected areas. Excessively hot water should also be avoided as this can irritate the already inflamed skin. Until the infection clears up, one should also abstain from using swimming pools, saunas and hot tubs as well as carrying out any forms of activity that makes sweating excessive (22).

Complications of folliculitis

Without adequate treatment and in an underlying immunosuppressive state, bacterial folliculitis may progress to pus-filled painful lumps known as furuncles. A cluster of these furuncles is known as a carbuncle. These form a connected area of infection underneath the skin (23).

Generally, the treatment of these conditions involves the application of warm compresses to relieve pain and promote natural drainage, however incision and drainage might also be indicated. In such cases, the infection would have spread deeper around the hair follicles. Antiseptic cleansers and oral antibiotics are definitely useful in such situations (24).

Other complications include scarring, dark patches, permanent hair loss due to the damaged follicles, the recurrence of folliculitis as well as cellulitis (25).

Conclusion

In conclusion, folliculitis, a common skin condition in which the hair follicles become

inflamed, is one of the consequences of hair removal; some methods having a larger predisposition than others. Although there are ways to minimise the extent of this inflammation, when it happens treatment should be started as soon as possible to prevent the development of complications that can follow suit (26).

Declarations

Conflict of interest: N.A.

Ethical statement: N.A.

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