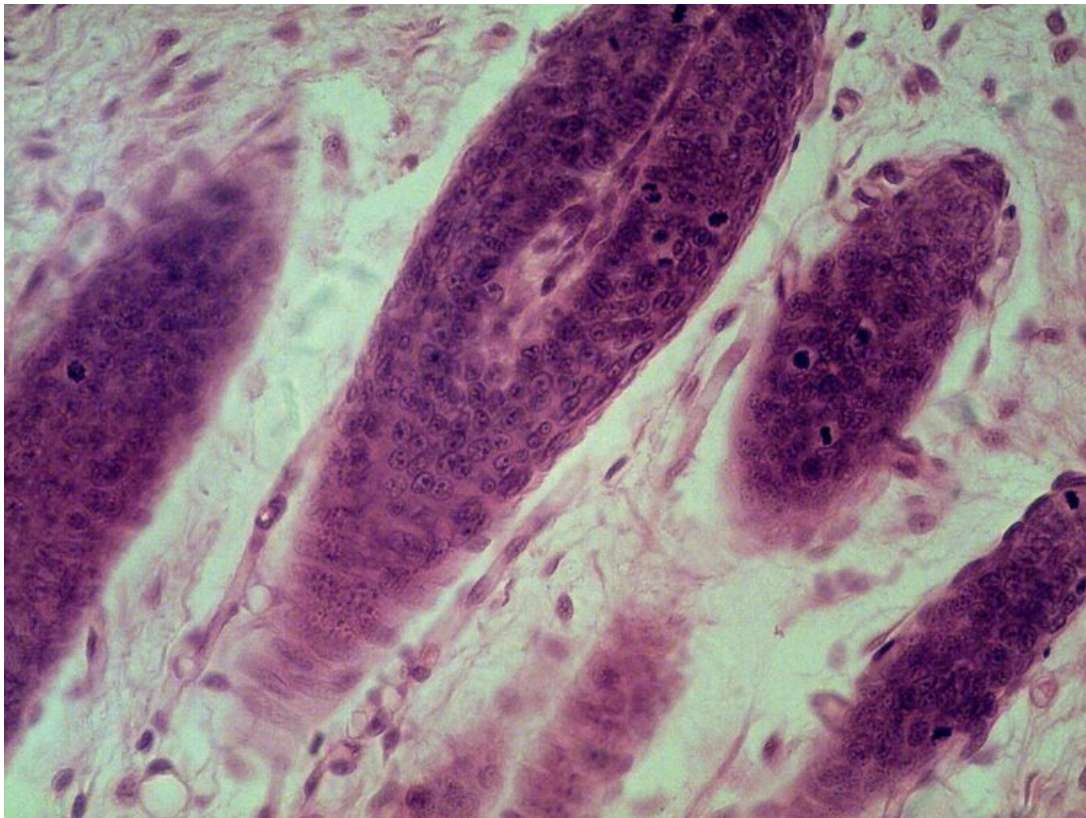


Folliculitis (Inflammation of Hair Follicles) — Symptoms and Treatment

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Folliculitis is an inflammatory condition that is characterized by the inflammatory cellular infiltrate of the hair follicles. Patients present with acute onset pustules and papules. Treatment is not indicated in most cases, but those with intense pain might benefit from antibacterial soaps, warm compressors and perhaps topical antibiotics. Patients with resistant folliculitis should receive systemic antibiotics, usually a cephalosporin. Those who have deep folliculitis should undergo incision and drainage of their dermal abscess.



Definition of Folliculitis

Folliculitis is an **inflammatory condition** that is characterized by the presence of inflammatory cells in the wall of the hair follicle. The presentation is, therefore, a **follicular pustule**.

Superficial folliculitis is defined as the restricted inflammation to the infundibular part of the follicle.

Deep folliculitis refers to inflammation of the hair follicle with dermal involvement.

Perifolliculitis is the inflammation of the surrounding dermis with little involvement of the hair follicle. **Acne** is considered as one form of folliculitis which is not infectious-related.

Epidemiology of Folliculitis

Superficial folliculitis is a common condition that is usually mild and self-limited. The exact incidence of superficial folliculitis is unknown. **Frequent shaving**, patients on **immunosuppression therapy**, **dermatosis**, **antibiotic use**, **diabetes**, and **obesity** are recognized risk factors of folliculitis. Patients receiving **epidermal growth factor receptor inhibitors** are very likely to develop folliculitis.

Gender does not seem to affect the incidence of the condition, but the **type of folliculitis** seems to be correlated with the sex of the patient. While men are more likely to develop **eosinophilic folliculitis**, women usually have a **pityrosporum infection** as the cause of their folliculitis.

Pathophysiology of Folliculitis

Folliculitis is an inflammatory condition that involves the hair follicle. The most common etiology of folliculitis is infectious-related. **Bacterial, fungal and parasitic infections** have been associated with folliculitis. Possible non-infectious etiologies of folliculitis include **trauma**, **inflammation** and the use of **certain drugs**, such as **antibiotics** or epidermal growth factor inhibitors.



[Image](#): "Folliculitis." by Vivvid - Own Work.
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Eosinophilic folliculitis is an **autoimmune condition** that is characterized by the initiation of an inflammatory response against the **sebocytes**. The principle inflammatory cell infiltrate in these patients is eosinophils.

Patients receiving **epidermal growth factor inhibitors** are at risk of developing folliculitis. It has been reported that almost all patients receiving this drug will develop folliculitis. The exact mechanism of folliculitis in these patients is not fully understood, but it is believed to be related to **disrupted follicular epidermal differentiation** and

subsequent follicular obstruction.

Clinical Presentation of Folliculitis

The semiology of folliculitis is different per the stage of the disease. Patients with superficial folliculitis complain of **acute pruritus around the inflamed area**. On the other hand, patients with deep folliculitis can report a previous history of chronic superficial folliculitis. Patients with deep folliculitis can have **pus drainage from their pustules**. Additionally, they can develop **scarring** from previous and recurrent folliculitis eruptions.

Patients receiving epidermal growth factor inhibitors usually present with the follicular eruption within two weeks from treatment initiation. The most common sites are the **face, scalp, chest** and **upper back**.

Physical examination of the inflamed area reveals **multiple papules** and **pustules**. The area surrounding the pustules is usually red in color. The pustules can have **central hair** piercing them. The most commonly involved sites are the **face** and **scalp**, followed by the **thighs** and **axilla**.

The most common cause of superficial folliculitis is **staphylococcus aureus infection of the hair follicle**. If left untreated, the **pustules can rupture and form a golden crust**. In a few patients, the condition can evolve into a boil which is a **dermal abscess**.

Patients with **tinea barbae infection** develop superficial folliculitis that is confined to **one side of the face**. These patients are usually men and work in the agricultural industry. They usually report having direct contact with farm animals.

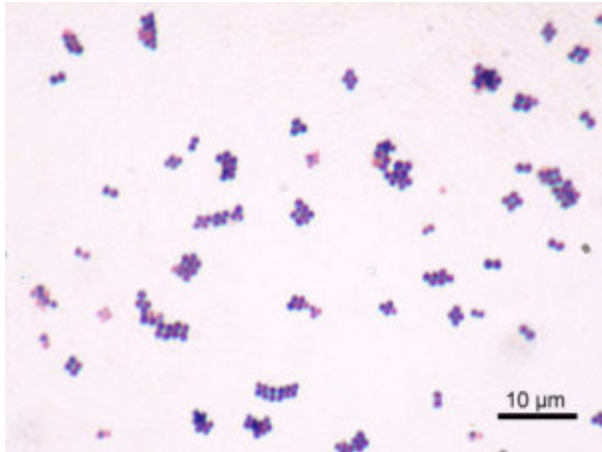
Those who receive **long-term antibiotics** usually develop **gram-negative folliculitis**. The patients develop multiple lesions around the nose and in the face. The most commonly identified organisms are **Enterobacter, Klebsiella, and Escherichia**.

In some patients, there is a **recent history of swimming in a tub or a swimming pool** before the follicular eruption. This form of folliculitis is usually related to **pseudomonas infection** and resolves within two weeks.

Young females who present with back and chest follicular eruption might have **Malassezia furfur infection**. This fungal infection is responsible for the **Pityrosporum folliculitis type**. **After shaving bumps** is another form of folliculitis that is usually non-infectious in etiology.

Japanese men, AIDs patients, and infants can develop **eosinophilic folliculitis**. The condition presents with a **pustular rash** that consists of papules and pustules. Eventually, these pustules coalesce with each other and form a **circinate plaque**. The typical picture would be a **circle that has a rim of pustules and a clearing center**. These lesions can be found on the face, back and arms.

Diagnostic Work-up for Folliculitis



[Image](#): "Microscopic image of Staphylococcus aureus (ATCC 25923). Gram staining, magnification : 1,000." by Y Tambe.
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The diagnosis of folliculitis is clinically based. In resistant cases, **gram stain, potassium hydroxide preparation, and biopsy** are of value in determining the etiology of the condition and directing the treatment towards a more specific approach.

If a gram stain or a bacterial culture is indicated, a pus swab from the pustules should be obtained to identify **gram-positive cocci**. The most common isolated organism is **staphylococcus aureus**.

Potassium hydroxide preparation of the pustule's swab is indicated when the etiology is suspected to be **fungal**. Patients with deep folliculitis should undergo **incision and drainage** of their abscesses. This procedure provides information for confirmation of the diagnosis and is usually therapeutic.

If a biopsy is performed, the typical picture would be that of an **intense inflammatory cell infiltrate into the follicular ostium**. Neutrophils, lymphocytes, and macrophages are the most commonly identified inflammatory cells on biopsy. Patients with eosinophilic folliculitis have an eosinophilic cell infiltrate as the name implies.

Patients with perifolliculitis show a similar picture to folliculitis but without the direct involvement of the hair follicle. Instead, the inflammatory cell infiltrate is usually confined to the areas surrounding the follicle.

Treatment of Folliculitis

The treatment plan of folliculitis should be **tailored against the most likely etiology** and not completely blind. Patients with uncomplicated superficial folliculitis do not need systemic antibiotics. The use of **antibacterial soaps** is usually sufficient.

In a few patients, the **pustules become intensely painful**. In that case, the use of **warm compressors**, with or without topical antibiotics, can be helpful. Patients with **deep folliculitis** should receive **oral antibiotics**.

The most commonly used systemic antibiotic for folliculitis is **dicloxacillin** or a **cephalosporin**. Non-responders should be prescribed **clindamycin, minocycline** or **linezolid**.

Patients with deep folliculitis should undergo an **incision and drainage** procedure which can be curative.

Patients with recurrent perinasal folliculitis might benefit from **mupirocin ointment** to eradicate the causative organism staphylococcus aureus.

Patients with **pseudomonas folliculitis** typically improve without any treatment. **Eosinophilic folliculitis** responds to **indomethacin 50 mg/day**, **minocycline** or **dapsone**. Those who have **pityrosporum folliculitis** should get a **ketoconazole cream**. If patients develop a **relapse**, **systemic antifungals** are indicated.

Epidermal growth factor receptor inhibitors can cause **self-limited folliculitis** which does not need any specific treatment. Those who develop folliculitis because of receiving **chronic antibiotics** benefit from discontinuing the current antibiotic and receiving **trimethoprim-sulfamethoxazole**.

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