

# Recurrent furunculosis and superficial folliculitis

**BRUCE TATE** PhD, FACD

Staphylococcal folliculitis-furunculosis that recurs when treatment is ceased can be challenging to manage.

## Case history

A non-obese 54-year-old man had an 18-month history of recurrent boils, particularly on his lower trunk, buttocks, groin, axillae and thighs. The boils usually started with a painful or itchy red papule or pustule. Some of these lesions spontaneously involuted, but most progressed to painful nodules that later drained significant quantities of pus, with relief to the pain. Boils occurring in skin folds were the most painful. Sometimes, when multiple boils occurred, the patient felt unwell with a mild fever but no sweats. Bad flares could take up to two months to settle but treatment with cephalexin 500 mg three times daily hastened recovery. Most of the boils left red marks that were slow to settle, and some left unsightly permanent atrophic scars. The patient also had episodes of superficial folliculitis, mostly on the upper trunk and proximal limbs, often linked to the flares of his boils. His fasting blood glucose level was repeatedly normal. Swabs taken from the boils grew *Staphylococcus aureus* that was resistant to tetracycline, penicillin and erythromycin but sensitive to other tested antibiotics.

## Diagnosis

A diagnosis of recurrent staphylococcal furunculosis and superficial folliculitis was made.

## Comment

The differential diagnoses for furunculosis and folliculitis are listed in the box on page 72.



Figure 1. Superficial folliculitis.

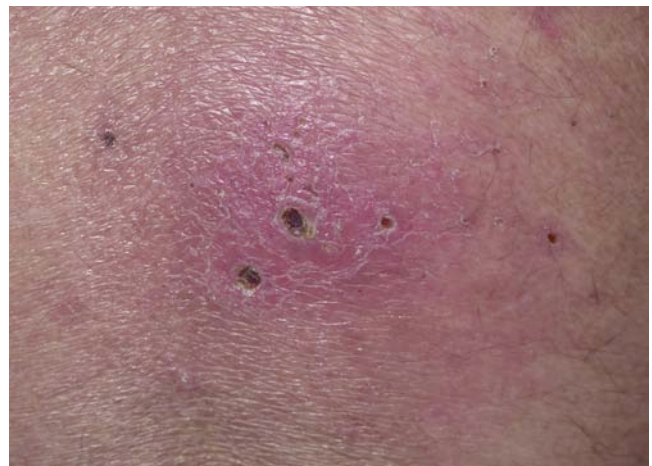


Figure 2. Furuncle (boil) resolving after spontaneous drainage while patient was taking cephalexin.

Recurrent furunculosis is caused by a deep infection of hair follicles, usually by *S. aureus*, although occasionally other aerobic or anaerobic bacteria are the cause (such as *Escherichia coli*, *Pseudomonas aeruginosa*, *Streptococcus faecalis*, *Bacteroides*, *Lactobacillus*, *Peptococcus* and *Peptostreptococcus*). The condition occurs at all ages but most commonly in adolescents or young adults, and presents as large tender red nodules (boils or furuncles) that often later point to drain pus and which tend to occur at sites of friction or minor trauma, such as skin folds or from clothing.

Staphylococcal superficial folliculitis is caused by staphylococcal infection of the upper ostial part of the hair follicles, and presents as superficial pustules or crusts – Bockhart's impetigo – or tender follicular pustules on a red base – sycosis (Figure 1). Like

Dr Tate is a Dermatologist in St Albans, Vic, and with the Skin and Cancer Foundation of Victoria.

boils, these lesions often appear in crops. The lesions in sycosis sometimes develop into boils; however, boils may form without a preceding superficial pustule being noticed. Cellulitis sometimes develops around boils. Boils usually settle spontaneously in a few weeks, although they may take longer (that is, months), particu-

larly if they do not spontaneously drain. They will settle more quickly if they are actively drained. Depressed scars or persistent red marks are often left (Figure 2).

Sycosis barbae is a variant of folliculitis that occurs in the beard area. It is usually staphylococcal, and affected patients often have

## Differential diagnoses of furunculosis and superficial folliculitis

### Furunculosis

- **Ruptured epidermoid cysts.** Usually cysts are solitary or few in number, and there is a history of pre-existing cysts.
- **Cystic acne vulgaris.** This is more likely to occur on broad skin areas of the face, neck, trunk and proximal limbs. Look for other features of acne.
- **Hidradenitis suppurativa ('acne inverse').** This occurs in the groin, natal cleft, axillae or submammary areas. It is an acne-like process of apocrine gland-bearing hair follicles and leads to recurrent-chronic discharging nodules and sinus tract formation. Secondary infection with various organisms, including *S. aureus*, occurs, and treatment is difficult.

### Superficial folliculitis

- **Acne vulgaris and other acne variants.** Other variants include scalp folliculitis (*acne necrotica miliaris*).
- **Gram-negative (bacterial) folliculitis.** This occurs usually on the face in a patient taking long term antibiotics for acne vulgaris or rosacea. Most cases are superficial folliculitis but it can be cystic. It is caused by a variety of Gram-negative organisms resident in the anterior nares. It settles with amoxicillin (alone or with potassium clavulanate) or trimethoprim (Alprim, Triprim), but oral isotretinoin (Isohexal, Oratane, Roaccutane) is most effective.
- **Drug induced acne/folliculitis.** This may occur from the use of oral medications such as corticosteroids, androgenic steroids, halogens (iodides), lithium, isoniazid and cyclosporin. Some topical drugs, particularly coal tar, can induce a sterile folliculitis.
- **Oil/chemical folliculitis.** The occlusive and irritant effects of oils can precipitate sterile folliculitis in people exposed to these chemicals, such as motor mechanics. Ointment formulations of topical agents may cause an occlusive folliculitis.
- ***Pseudomonas aeruginosa* folliculitis (including spa pool folliculitis).** This waterborne bacterium causes outbreaks of folliculitis, usually from bathing in insufficiently chlorinated spa pools. Malaise, headache and low grade fever may also occur. The condition spontaneously settles within two weeks. Ciprofloxacin may speed recovery.
- **Fungal folliculitis**
  - **Tinea.** Folliculitis caused by dermatophyte infection can occur on any hair-bearing site, including the beard area (a form of sycosis barbae). Often topical corticosteroids have been used inappropriately. Consider this diagnosis if the folliculitis is not responding to antibiotics, especially if there is tinea elsewhere. Kerion is a markedly inflamed form, usually on the scalp. Oral griseofulvin (Grisovin) is usually curative.
  - **Malassezia folliculitis.** *Malassezia (Pityrosporum)* yeasts cause a low grade, sometimes extensive folliculitis, most often on the trunk. Patients may also have pityriasis versicolor. It does not settle with oral antibiotics but may settle with ketoconazole-containing antifungal shampoos (Hexal Konazol, Nizoral Treatment, Sebizole Shampoo) applied 20 minutes before showering for a few weeks. Oral ketoconazole (Nizoral) 200 mg per day for 10 days is effective. Recurrence is common.
- **Mechanical folliculitis, 'ingrowing hairs' or pseudofolliculitis.** This occurs when hairs that are orientated more horizontally curl and penetrate the skin before or after emerging from the follicular orifice. It most commonly occurs in shaved areas such as the anterior neck in men or the legs or bikini line in women.
- **Eosinophilic folliculitis.** Pathology shows degenerate follicles filled with eosinophils. It may respond to topical or oral corticosteroids, dapsone or indomethacin (Arthrexin, Indocid). There are a number of types, and an idiopathic form with recurrent itchy pustules tending to be annular on the face or trunk is more common in Japanese people. There is also a paediatric form, and another that is seen in immunosuppressed people (particularly those infected with HIV) or those with various haematological disorders.
- **Pustular miliaria rubra.** This is not a follicular eruption but rather affects eccrine ducts, usually on the back in people who sleep on plastic covered mattresses, particularly if they are febrile. It may occur also in persistently humid climates.

nasal carriage of *S. aureus*. Shaving probably spreads the infection, and severe infections can lead to permanent scarring. As sycosis barbae can be caused by dermatophytes, tinea should be sought at other sites and should also be considered if the condition does not respond to antibiotics or there is no growth on a bacterial swab. Tinea can be confirmed on biopsy or scraping for culture.

Carbuncles – a collection of boils connected by sinus tracts – are uncommon. They tend to occur on the back of the neck or shoulders, or on the buttocks or hips, and they suppurate, slough to an ulcer and then slowly heal. Patients are often febrile and systemically unwell.

### Predisposing factors

Staphylococcal furunculosis and folliculitis usually occur in healthy people and often there is no identifiable cause. Predisposing factors include the following:

- chronic carriage of *S. aureus*, found in up to 30% of patients
- maceration or hyperhydration of the skin from factors such as obesity, tendency to sweatiness and hot and/or humid weather
- poor personal hygiene
- for superficial folliculitis, waxing or shaving the affected area.

Rarer predisposing factors include poorly controlled diabetes mellitus, secondary immunosuppression from malnutrition, leucopenia, lymphocytopenia, HIV infection, therapeutic immunosuppression and various primary immunodeficiencies.

The primary immunodeficiencies are usually associated with furunculosis rather than superficial folliculitis alone. Their immunopathogenesis and manifestations are complex and these aspects will not be discussed further. A primary immunodeficiency should be suspected if the patient is prone to other infections (often serious) or, for some of the disorders, autoimmune diseases. These primary immunodeficiencies include neutrophil disorders such as neutropenias, chronic granulomatous disease, leucocyte adhesion deficiency and Chediak–Higashi syndrome, and disorders of antibody formation, particularly common variable immunodeficiency, X-linked agammaglobulinaemia, the hyperimmunoglobulin M and hyperimmunoglobulin E syndromes and Wiskott–Aldrich syndrome. It is not worth routinely looking for these disorders in patients who have mild to moderate furunculosis. However, if one is suspected, screening can be done with blood tests (full blood evaluation, immunoglobulin subtype levels and neutrophil function tests, including the nitroblue tetrazolium test). Help from an immunologist at a pathology laboratory or hospital is advisable.

There have been reports of community outbreaks of methicillin-resistant *S. aureus* (MRSA), including among team sportspeople and military recruits. Affected patients presented particularly with furuncles, often recurrent, but also with folliculitis, cellulitis and, occasionally, invasive infections, particularly necrotising

pneumonia. These outbreaks have distinct epidemiological and bacteriological features.

### Treatment

If possible, pus specimens from the boil should be sent for bacterial culture and antibiotic sensitivity testing, and the *S. aureus* carriage status of the patient determined by culture of swabbed specimens from common carriage sites, especially the anterior nares. In chronic cases, other people in the household should be tested to identify silent carriers, and any carriers treated.

### Superficial folliculitis

Superficial folliculitis often settles spontaneously but this may be hastened by patients using antibacterial soaps such as Sapoderm, Gamophen or Solyptol (all of which contain triclosan), applying topical antiseptics such as chlorhexidine plus cetrimide (Savlon Antiseptic Liquid, applied diluted 1:20) or triclosan as a wash (Microshield T, Oxy Skin Wash, pHisoHex, Sapoderm Skin Wash Solution, Dettol Classic Liquid [the last product contains chloroxylenol as well as triclosan]), or using topical antibiotics such as clindamycin (ClindaTech, Dalacin T Topical Lotion) or mupirocin (Bactroban).

Advise patients that loose clothing should be worn, and that if the folliculitis is shaving-induced, either fresh razors should be used or razors should be soaked in alcohol or an antiseptic after use. Flexural folliculitis may respond well to the antiperspirant aluminium chloride hexahydrate (Driclor), applied once or twice daily.

Most cases respond well to antibiotics suitable for penicillinase producing organisms. I usually start with cephalexin (Cilex, Ibilex, Keflex, Sporahexal) 500 mg three times daily for 10 to 30 days depending on severity. Alternatives include flucloxacillin, dicloxacillin (Diclocil, Dicloxig, Distaph), amoxycillin with or without potassium clavulanate, and sulfamethoxazole plus trimethoprim (Bactrim DS, Resprim Forte, Septrin Forte) or as guided by sensitivity testing.

### Furunculosis

Furunculosis is managed with warm compresses and analgesics if required. Surgical drainage is best done when the boil points (this is a good time to culture the pus). Patients may need local anaesthesia during the procedure; deep cruciate incisions are no longer recommended. Drawing agents (such as Magnoplasm applied under occlusion for 12 hours) are sometimes helpful.

Topical antibiotics are usually ineffective unless applied very early in an attempt to abort an episode. The same oral antibiotics as used in superficial folliculitis should be given until the boils settle. Applying an antiseptic on and around the boils and covering them with a simple dressing helps to minimise cross contamination. The person changing the dressing should

wear gloves and wash his or her hands afterwards with an antibacterial soap.

### Recurrent folliculitis–furunculosis

Recurrent folliculitis–furunculosis is a challenge as treatment usually clears the lesions but they often recur when treatment is stopped. A more prolonged course of oral antibiotics (three to six weeks) may give more long term suppression. If *S. aureus* carriage is identified, anterior nares and skin folds (axillae, groin, natal cleft and submammary area) should be treated with mupirocin cream or ointment twice daily for 10 days and then once weekly for maintenance. Although it is not known whether there is any value in treating patients this way if swabs of carriage sites are negative, I usually do this as carriage may be intermittent and, therefore, missed by swabs. I also advise that the patient and other people living in the house use antibacterial soaps for bathing and hand washing. Any other person in the house with folliculitis–furunculosis should be actively treated. To minimise the risk of cross contamination, towels, sheets, bedclothes and clothing should be washed in hot water (about 55°C) while members of the household have active folliculitis and/or boils.

If these measures fail, particularly for more severely affected individuals, it is worth considering repeating swabs to check antibiotic sensitivities and that the infection is staphylococcal. If the infection is community acquired MRSA, the bacteria will be resistant to beta-lactam antibiotics but often sensitive to others; advice should be sought from a microbiologist on the best treatment. Investigation for an immunodeficiency disorder and the starting of long term suppression with antibiotics should also be considered. Appropriate antibiotics include those recommended above, such as cephalexin 500 mg twice daily, and also sulfamethoxazole plus trimethoprim twice daily or minocycline (Akamin, Minomycin) 100 to 150 mg daily. Combinations of rifampicin (Rifadin, Rimycin) 300 mg twice daily and either

fusidic acid (Fucidin) 500 mg twice daily or clindamycin (Cleocin, Dalacin C Capsules) 300 mg twice daily for one month can also be tried but are expensive. The advantage of these combinations are that they are efficient at clearing carriage sites of *S. aureus*. The folliculitis–furunculosis may still recur when treatment is stopped and potential side effects must be weighed against the benefits. A small study in New Zealand found that rifampicin and flucloxacillin given together for one week each month for at least six months was effective with a low recurrence rate.<sup>1</sup>

Experimental treatments have been tried but have not been shown to be sufficiently effective to recommend. These have included staphylococcal vaccines and 'bacterial interference treatment' (nonpathogenic strains of *Staphylococcus* inoculated to multiple sites once the pathogenic strain is eradicated with antibiotics).

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### Reference

1. Sweetman L, Ellis-Pegler RB. Treatment of recurrent staphylococcal furunculosis [letter]. *Med J Aust* 1992; 156: 292.

### Further reading

1. Gollidge CL. Management of recurrent furunculosis. *Curr Therapeutics* 1999; 40 (8): 74-77.
2. Kowalski TJ, Berbari EF, Osmon DR. Epidemiology, treatment, and prevention of community-acquired methicillin-resistant *Staphylococcus aureus* infections. *Mayo Clinic Proc* 2005; 80: 1201-1209.
3. New Zealand Dermatological Society Inc. Folliculitis. <http://dermnetnz.org/acne/folliculitis.html> (accessed June 2006).
4. Cyr PR. Folliculitis. [www.emedicine.com/derm/topic159.htm](http://www.emedicine.com/derm/topic159.htm) (accessed June 2006).

DECLARATION OF INTEREST: None.