Management of bacterial infections of the hair follicles – folliculitis and furunculosis

What are bacterial infections of hair follicles?

1. Causative organism: *Staphylococcus aureus*.

2. When this organism invades the hair follicle it causes one of 3 different clinical patterns of infection: folliculitis, furunculosis (boils) or carbuncles:

   - Folliculitis is a superficial infection of single hair follicles,
   - Furuncles are deeper infections of the hair follicles
   - Carbuncles represent the coalescence of a number of furuncles.

3. It is possible for individuals to carry *Staphylococcus aureus* in the anterior nose, axillae, perineum and on some skin rashes eg eczema, psoriasis

Which population is at risk?

1. **Folliculitis**: Hair-bearing skin and after application of greasy ointments which can cover or occlude the hair follicles.

2. **Furuncles (also known as boils)**: These are often seen in those who carry *Staphylococcus* (especially in nasal passages), patients with a tendency to develop eczema - rarely in patients with underlying diseases such as conditions that lead to immunosuppression or diabetes. Boils may also spread in families where a family member has a boil.

3. **Carbuncles**: Those who have debilitating conditions such as malaria, chronic diarrhoea, diabetes, lymphoma, people who are chronically malnourished or on long term steroids or where a boil forms in an area covered by tight clothing eg a collar.

What are the clinical signs and symptoms?

1. Folliculitis:

   - Tiny pustules - some itching initially;
   - Often appear in groups on hair-bearing sites such as the beard region and lower legs;
   - The lesions heal without scarring;

2. Furuncles:

   - Red, tender, hot (and often painful) raised lesions form over one or two days followed by the formation of a "head" after another two to three days, as the lesion develops into an obvious pustule;
   - Green-yellow pus can be expressed along with a core “plug” of necrotic tissue leaving an inflamed and irregular crater. Appear as single lesions or clusters, favoured locations being locations where there is mechanical damage e.g. where clothes rub or near sites where bacteria are carried eg axillae, face;
   - The lesions heal leaving a scar.
3. Carbuncles:

- As with furuncles but larger in size as a number of adjacent hair follicles are infected;
- The patient will often be systemically unwell with lymphadenopathy and fever.

**How is diagnosis confirmed?**

1. If necessary diagnosis is confirmed by culture of a skin swab.
2. A clinical diagnosis is sufficient to start treatment.

**What might it be confused with?**

1. **Folliculitis**: non-staph bacterial types of folliculitis eg candidal folliculitis, gram negative folliculitis eg Pseudomonas aeruginosa or pseudofolliculitis of the beard caused by ingrowth of hair.
2. **Furuncles**: cystic acne, hidradenitis suppurativa, infected sebaceous cysts, cutaneous leishmaniasis, myiasis and some disseminated bacterial or fungal infections.
3. **Carbuncles**: as for furuncles plus a syphilitic gumma, donovaniasis.

**What preventive measures should be taken?**

1. **Folliculitis**:
   - Apply topical treatments in such a way as to follow the direction of the hair;
   - Avoid using greasy ointments to treat hairy areas of the body. Creams or lotions should be considered as alternatives.

2. **Furuncles**:
   - Use an antiseptic to treat damage to the skin particularly in those who fall into “at risk” categories.

3. **Carbuncles**
   - As above. Treat furuncles quickly and avoid covering these with tight clothing.
Which treatments are most effective?

For mild cases no treatment is needed.

- For mild cases no treatment is needed.
- Antiseptics such as povidone iodine or a topical antibacterial such as mupirocin or fucidin are helpful.
- For severe cases oral antibiotics (cloxacillin, erythromycin) may be needed.

Furuncles:

- Warm compresses, lancing or incising the lesion and applying a topical antibiotic or antiseptic will help to relieve discomfort (see below). This is likely to be sufficient to treat a single lesion.
- For large or multiple lesions oral antibiotics will be needed but it is usually necessary to drain the lesion.

Carbuncles:

- Antibiotics are always indicated and initially may need to be given by intravenous or intramuscular injection;
- Once lesions begin to resolve treatment may be changed to oral antibiotics as above for 2 weeks;
- Warm topical compresses might provide comfort but surgical intervention is not recommended;
- Analgesics are almost always indicated.

How should the treatments be used?

Folliculitis:

- Antiseptic bath preparations or soaps may be helpful to wash with instead of or alongside topical/oral therapy.

Furuncles:

- The lesion can be brought to a head more quickly by application of a warm compress;
- It can then be lanced with a sterile blade and the contents expressed;
- The resulting wound should be treated with topical antibiotic and covered with a clean dressing;
- This procedure is only suitable when one or two solitary lesions exist;
- If lesions recur despite active treatment, bacteriological swabs should be taken from the nose, axilla and perineum to ascertain whether the individual is a Staphylococcus carrier. This can be treated by topical nasal antibiotics or antiseptics eg mupirocin or naseptin. It may be necessary to treat the whole household if two or more members are infected.
Carbuncles:

- Warm compresses might be useful to relieve discomfort but lesions should not be lanced.

What are the common concurrent problems
1. Folliculitis: None
2. Furuncles: None
3. Carbuncles: Fever and lymphadenopathy

What are the uncommon concurrent problems?
1. Folliculitis: None
2. Furuncles: Lymphangitis, lymphadenitis, bacteraemia, osteomyelitis and sinus thrombosis
3. Carbuncles: As above but a higher risk of septicaemia

What are the commonly held misconceptions about the disease?
- That patients with recurrent furuncles (boils) commonly have underlying diabetes. This can occur but it is not common.