

Answers to Medical Quiz

A1. There are extensive skin redness and edema of the genitals, groin and gluteal area.

A2. Admission of the patient, complete blood count, culture and initiating broad systematic antibiotic.

A3. Skin fasciitis.

DISCUSSION

Skin infection is a common medical condition characterized by inflammation of the subcutaneous tissue, dermal and epidermal layers. Skin infection is also known as cellulitis, which is caused by bacterial infection, often presents as a rash and redness, which could spread rapidly¹.

Skin infection could be classified into two categories, based on causative pathogens: purulent (furuncles and carbuncles) and non-purulent infection (necrotizing fasciitis and cellulitis). Skin infection could also be classified based on clinical presentation as mild or severe. Mild skin infection is associated with local symptoms only, whereas severe infection is associated with systemic symptoms^{1,2}.

The risk of skin infection includes trauma, immunosuppression, peripheral vascular disease, bites and poorly controlled diabetes³⁻⁵.

The causative organisms of skin infection include bacterial, viral and fungal pathogens. Most skin infections are caused by bacterial organisms which are commonly gram-positive cocci, such as *S. pyogenes* and *S. aureus*. Skin infection could be caused by gram-negative rods and anaerobic bacteria in immunocompromised patients and patients with chronic ulcer⁴.

The pathophysiology of skin infection involves breaking the physical barrier of skin by external trauma or cut wound leading to the invasion of a pathogenic organism. Patients react to micro-organisms by inflammatory response characterized by warmth, erythema and pain. The inflammatory response is more complicated in patients with diabetes and immunocompromised^{4,5}.

Mild skin infection is self-limited, whereas severe skin infection may lead to complication, such as folliculitis, which is an infection of one or more hair follicles. Another complication of severe infection is furuncles, which result in boils. A rare complication of severe skin infection is carbuncle, which is larger in size than furuncles and has openings that drain pus⁶.

Skin fasciitis and necrotizing fasciitis are serious complications, particularly in immunocompromised patients requiring aggressive management by debridement of necrotic tissue and broad systemic antibiotic^{5,6}.

The aim of treatment of skin infection is to eradicate the causative pathogens, relieve the local and systemic signs and symptoms and prevent complications. The main therapy for

mild skin infection is an oral antibiotic. The treatment of severe infection with an abscess is incision and drainage and systemic antibiotic. Aggressive debridement is required in cases of necrotizing fasciitis⁶.

CONCLUSION

Skin infection is a very common condition and could be mild or severe. Mild skin infection is self-limited, whereas severe could result in significant complications requiring aggressive management.

Potential Conflicts of Interest: None.

Competing Interest: None.

Sponsorship: None.

Ethical Approval: Approved by the Pediatrics Department, Salmaniya Medical Complex, Bahrain.

REFERENCES

1. Lin JN, Chang LL, Lai CH, et al. Clinical and Molecular Characteristics of Invasive and Noninvasive Skin and Soft Tissue Infections Caused by Group A Streptococcus. *J Clin Microbiol* 2011; 49(10):3632-7.
2. Miller LS, Cho JS. Immunity Against Staphylococcus Aureus Cutaneous Infections. *Nat Rev Immunol* 2011; 11(8):505-18.
3. Lipsky BA, Berendt AR, Cornia PB, et al. 2012 Infectious Diseases Society of America Clinical Practice Guideline for the Diagnosis and Treatment of Diabetic Foot Infections. *Clin Infect Dis* 2012; 54(12):e132-73.
4. Thomas KS, Crook AM, Nunn AJ, et al. Penicillin to Prevent Recurrent Leg Cellulitis. *N Engl J Med* 2013; 368(18):1695-703.
5. Halilovic J, Heintz BH, Brown J. Risk Factors for Clinical Failure in Patients Hospitalized with Cellulitis and Cutaneous Abscess. *J Infect* 2012; 65(2):128-34.
6. Hurley HJ, Knepper BC, Price CS, et al. Avoidable Antibiotic Exposure for Uncomplicated Skin and Soft Tissue Infections in the Ambulatory Care Setting. *Am J Med* 2013; 126(12):1099-106.