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Case Report

Occipital abscess due to stenotrophomonas maltophilia: A rare case report

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Abstract Pyoderma is a skin and soft tissue infection caused by Gram-positive or Gram-negative bacteria. Abscess is a form of pyoderma manifestation. *Stenotrophomonas maltophilia* is a group of Gram-negative bacteria causing pyoderma associated with nosocomial infections and can be obtained from the community. Pyoderma is diagnosed based on physical examination supported by causative organism culture and isolation results. The aim of pyoderma treatment is to eradicate the causative organism, reduce its symptoms, prevent complications and recurrence. We reported a case of occipital abscess caused by *Stenotrophomonas maltophilia* bacteria. The patient received systemic and topical antibiotics and had a significant clinical result.

Key words
Pyoderma; Skin bacterial infection; Wound care; Gram-negative bacteria.

Introduction

Pyoderma is the most common skin and soft tissue bacterial infection caused by Gram-positive bacteria, such as *Staphylococcus aureus* and *Streptococcus pyogenes*. One of the manifestations of pyoderma is an abscess, which is an accumulation of pus in the body cavity that can occur in either tissue or organs.[1,2] *Stenotrophomonas maltophilia* is a group of aerobic Gram-negative bacteria that cause pyoderma. *Stenotrophomonas maltophilia* can infect a host who is immunosuppressed, undergo chemotherapy, or use broad-spectrum antibiotics.[1,3,4]

The incidence of abscesses was increasing every year. In 1997, there were 4.6 million patients with abscesses in the United States, which increased to 9.6 million in 2005. Signs and symptoms of an abscess include reddish, painful, warm, and swollen nodules that look like there is a liquid inside when the nodule is pressed.[1,5] We reported a rare case of a 62-year-old woman with an occipital abscess due to *Stenotrophomonas maltophilia.* This patient was treated with a systemic antibiotic, cefixime, wound toilettes, and open compresses, topical antibiotic and had a significant clinical result.

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Case report

A 62-year-old woman with pustule and swelling at the back left head since 14 days ago. The lesion initially appeared like acne on the scalp, then progressed and spread to the surrounding area. The patient felt pain when the head was pressed and warmly palpated at the lesion area. She has had a history of intermittent fever and headache since one week ago.

Dermatological status at the left occipital area discovered an erythematous nodule, edema, pus, and crusting.

Figure 1 Erythematous growth at the left occipital area, accompanied with edema, pus and crusting.

Microbiology examinations, such as fungal and bacterial cultures and antibiotics sensitivity tests, were performed on the patient. The fungal culture with scalp and hair scraping samples did not find yeast cells, hyphae, or pseudohyphae. The microbiology test result identified *Stenotrophomonas maltophilia* on culture with sensitivity results showing resistance to gentamycin, tobramycin, and amikacin.

Based on clinical manifestation and culture results, the patient was diagnosed with occipital abscess due to *Stenotrophomonas maltophilia*. The patient was treated with antibiotics: cefixime 200 mg/12 hours/oral, compressed with PK 1:10.000 and with Sodium Chloride 0.9% for 15 minutes every 2 hours, fusidic acid cream, and analgesic.

Follow-ups were performed on day-7th, day-21st, and day-42nd. The lesion was dried completely and appeared as erythematous patch with a few crusts. The compression and topical antibiotic were continued, and the intensity was reduced to every 12 hours.

Discussion

Pyoderma is the most common skin and soft tissue bacterial infection caused by Gram-positive bacteria groups, such as *Staphylococcus aureus* and *Streptococcus pyogenes*, also other Gram-negative groups. Abscess is one of the pyoderma manifestations. The formation of the abscess was related to a specific immune response.[6] Acute inflammation in the abscess was initiated with bacteria entry into the organ or tissue. The inflammation formed a pus-filled cyst with acute inflammation signs.[1,5]

Stenotrophomonas maltophilia is a basil Gram-negative bacteria isolated from water, soil, plants, or medical devices. This bacterium is a group of commensal pathogens with low virulence, but it also plays a role in opportunistic nosocomial infection. The bacteria are aerobic, motile with flagella, non-glucose fermenting, positive catalase, and negative oxidase. The pathogenesis of *Stenotrophomonas maltophilia* infection involving various types of virulence that cause these pathogens can avoid host immune system detection, colonization, and infection.[6] *S. maltophilia* virulence factor consists of biofilm layers, extracellular enzymes, flagella, pili, or fimbriae. The most important risk factor for *S. maltophilia* infection is associated with impaired immune status, such as immunosuppression condition, hematology malignancy, or various medical treatments received, such as intravascular catheter insertion, irrigation water, mechanical ventilation, nebulization, dental devices, and broad spectrum anti-microbe therapy.

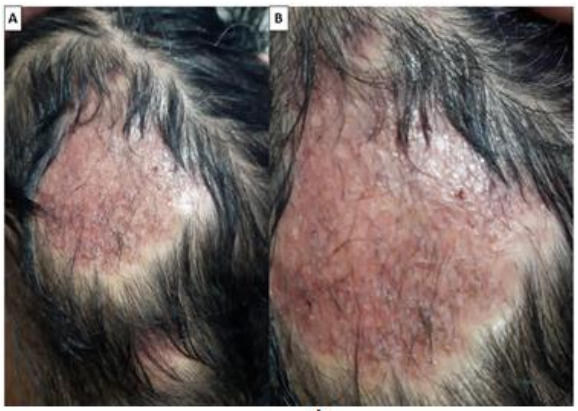

Figure 5 Follow up on day 42nd; the left occipital area appeared as erythematous patch with minimal crust.

Other risk factors, including humidity and insect bite history, can also be supporting factors for infection.[3,5,7]

Skin and soft tissue infections by *S. maltophilia* are commonly in the form of subcutaneous nodules or primary cellulitis that may manifest as ecthyma gangrenosum.[4,6,8] In addition, *S. maltophilia* can also cause sepsis, meningitis, endocarditis, respiratory tract infection, urinary tract infection, and keratitis.[2,4,8] In this case, the patient initially felt a small mass, like acne, that progressed rapidly and was suspected of originating from folliculitis, which became a carbuncle and abscess in the occipital area. Based on the lesion culture result, *S. maltophilia* was identified as the microorganism that caused infection in this patient. The patient has no risk factor of nosocomial infection, trauma, or certain comorbidities, but the etiology of infection was related to the patient's occupation or environment.[1]

The patient received systemic and topical antibiotics simultaneously. A systemic antibiotic, cefixime, was given orally to the patient. Cefixime is a third generation of cephalosporine that inhibits cell wall formation, so the bacteria cannot survive.[7,9] The patient was also treated with a topical antibiotic, fusidic acid. This drug inhibits bacterial protein synthesis by binding EF-G on the ribosome, preventing EF-G guanosine diphosphate complex release and effectively inhibiting bacterial protein synthesis by inhibiting translation. This antibiotic is bacteriostatic but, in high concentration, can be bactericidal. This drug is applied on the skin twice or three times daily. Fusidic acid has the same effectivity as topical mupirocin.[7] Wound compress is useful to remove inherent debris and necrotic tissue on the wound surface and aims to create an optimal condition at the wound site for wound healing without complication. Various types of water, such as tap water, boiled water, distilled water, normal saline, and povidone-iodine, have been recommended for wound toilets. Normal saline solution is preferred because it is an isotonic solution and does not interfere with the normal healing process. Potassium permanganate (PK) is an organic compound used for wound toilets. This compound is a strong oxidizer. Oxidants in potassium permanganate can also act as an antiseptic.[7,9,10]

Conclusion

Pyoderma is the most common skin and soft tissue infection caused by Gram-positive or Gram-negative bacteria. *Stenotrophomonas maltophilia* is Gram-negative bacteria that cause commensal and opportunistic pyoderma. Antibiotic administration is the therapy of choice in pyoderma caused by Gram-positive or Gram-negative bacteria.

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