Attempting to understand diabetic foot infectious diseases as well as to treat it.

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Introduction

Foot infections are common in diabetic individuals and are associated with significant morbidity and the risk of lower extremity amputation. Diabetes foot infections can be mild, moderate, or severe. The most common pathogens in previously untreated mild and moderate infection are Gram-positive bacteria such as *Staphylococcus aureus* and beta-haemolytic streptococci. Polymicrobial infections are common in severe, persistent, or previously treated infections. Diabetic foot infection is diagnosed based on clinical signs and symptoms of local inflammation. Infected wounds should be cultured after debridement. Tissue specimens obtained by scraping the base of the ulcer with a scalpel or by wound or bone biopsy are strongly preferred to wound swabs. Imaging studies are indicated for suspected deep soft tissue purulent collections or osteomyelitis. Optimal management requires aggressive surgical debridement and wound management, effective antibiotic therapy, and correction of metabolic abnormalities (mainly hyperglycaemia and arterial insufficiency)

Verifying the diagnosis

Because all skin ulcers harbour microorganisms, diabetic foot infection must be diagnosed clinically rather than bacteriologically [1]. The presence of purulent discharge from an ulcer or the characteristic indications of inflammation is used to make a clinical diagnosis of foot infection (i.e., erythema, pain, tenderness, warmth, or induration). Other signs of infection include a foul odour, the appearance of necrosis, and wound healing failure despite adequate care. 10 In some diabetic foot infections, local inflammatory signs may be less evident or non-existent. Pain and tenderness, for example, may be diminished or non-existent in people with neuropathy, but erythema may be absent in those with vascular disease. Acute Charcot's foot is distinguished by a progressive degradation of weight-bearing joints, most commonly in the foot or ankle. It can clinically mimic cellulitis and presents as erythema, oedema, and elevated temperature of the foot. Most patients with diabetic foot infection do not have systemic features such as fever or chills. The presence of systemic signs or symptoms indicates a severe deep infection.

Trying to ascertain the extent of infection

Early identification of the affected tissue location can assist effective therapy and avoid infection progression [2]. The incision should be carefully washed and debrided to eliminate any foreign materials or necrotic material, and it should be probed with a sterile metal device to locate any sinus tracts, abscesses, or bone or joint involvement. Osteomyelitis is a common and deadly consequence of diabetic foot infection that can be difficult to diagnose. Amputation risk increases with delay in diagnosis. The risk factors for osteomyelitis are summarised in visible bone and palpable bone by probing are predictive of underlying osteomyelitis in diabetic foot infection patients. Laboratory tests, such as white blood cell count and Erythrocyte Sedimentation Rate (ESR), have low sensitivity for osteomyelitis diagnosis. Normal ESR results rule out osteomyelitis; however, an ESR of greater than 70 mm per hour raises the possibility of osteomyelitis. A percutaneous or open bone biopsy is required for a definitive diagnosis. If the diagnosis of osteomyelitis is still in doubt after imaging, a bone biopsy is advised.

Attempting to establish infection severity

The severity of the infection determines the appropriate antibiotic regimen and route of administration [3]. It also is the primary consideration in determining the need for hospitalization and the indications and timing for any surgical intervention.

Diagnostic imaging

Diagnostic imaging is not required for every diabetic patient with a foot infection [4]. Plain foot radiography is recommended for the detection of osteomyelitis, foreign substances, or soft tissue gas. Bony anomalies caused by osteomyelitis can be indistinguishable from the damaging effects of Charcot's foot and are usually not visible on plain radiography until two to four weeks after infection. If plain radiography is negative but osteomyelitis is suspected clinically, a radio-nuclide scan or magnetic resonance imaging should be performed. Combining a technetium bone scan with a gallium scan or a white blood cell scan may improve osteomyelitis diagnosis. Magnetic resonance imaging gives a more accurate picture of the extent of the infectious process. Ultrasonography and computed tomography are also useful in detecting soft tissue anomalies (e.g., abscess, sinus tract involvement, cortical bone involvement) and may provide direction for diagnostic and therapeutic aspiration, drainage, or tissue biopsy.

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Treatment

Adequate antibiotic medication, surgical drainage, debridement and removal of dead tissue, appropriate wound care, and correction of metabolic imbalances are all required for effective diabetic foot infection management.

Surgical treatment

The cornerstone of treatment for deep diabetic foot infection is surgery. Simple incision and drainage to massive repeated surgical debridement and amputation are all options. Timely and vigorous surgical debridement, resection, or amputation may eliminate the need for more extensive amputation [5]. Severe infection in an ischemic limb, necrotizing fasciitis, gas gangrene, and infection linked with compartment syndrome all necessitate immediate surgery. In individuals with osteomyelitis, surgical removal of damaged bone has traditionally been the mainstay of therapy. Nonetheless, two-thirds of patients with osteomyelitis have had effective treatment with a lengthy course of antibiotics alone.

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