Chapter 2-12-5. Anaerobic infections (individual fields): necrotizing fasciitis

Introduction

Necrotizing fasciitis is a generic term for infections of soft tissue with necrosis. The lesion involves subcutaneous tissue and superficial fascia and spreads rapidly to involve the deep fascia. It has been proposed that these conditions including descending necrotizing mediastinitis (due to dental caries) in the neck, Fournier’s syndrome in the genitalia, gaseous gangrene, and fulminant infection with group A hemolytic Streptococcus (the so-called “killer bug”) should be generalized as skin/soft tissue infections [1, 2].

Pathogenesis

Necrotizing fasciitis is a generic term for infections that extend rapidly over areolar connective tissue, requiring treatment of extreme urgency. The major causative organisms include group A hemolytic Streptococcus, S. aureus, anaerobic bacteria and intestinal flora. Oral infection with Vibrio species or Aeromonas species may also occur. Cases of gas gangrene include those with primary gas gangrene due to infection with Clostridium spp. and those with anaerobic infections, i.e., secondary gas gangrene associated with an underlying disease. Recent reports have also documented the presence of community-acquired infection with MRSA. Necrotizing fasciitis usually occurs in patients who have an underlying disease such as diabetes mellitus or with trauma or surgical wounds as the infectious route, but healthy individuals may also suffer this disease. As inflammation progresses, shock may occur, resulting in necrosis.

Diagnosis

Patients with fulminant group A hemolytic streptococcal infection may present with pharyngitis symptoms in the early stage. However, basically, localized rubor, swelling and circulatory disorder accompanied by severe pain extend rapidly, and the patient may develop a high fever. As necrosis progresses, the lesion may exhibit water blisters, bloody blisters and purplish patches, possibly resulting in skin necrosis. Infection with gas-forming bacteria is characterized by a sensation of crushing snow and crepitation on palpation. The diagnosis is established when radiography and CT reveal gas patterns. The finger test from a small incision shows a characteristic positive result of easy dissection of the subcutaneous tissue from the deep fascia. The condition progresses rapidly and the patient tends to lapse into shock and multiple organ failure (MOF).

Treatment

Early diagnosis and treatment are pivotal, and the prognosis depends on the initial care given [2]. The key treatment points include improvement of general status, drainage and resection of necrotic tissue, and antibiotic chemotherapy (Table 1) [1]. Transfer to an emergency unit with an intensive care unit should be considered if the patient is in shock. The causative bacterium should be inferred by gram staining of abscess or necrotic tissue.
Surgical treatment

Deep and extensive drainage and resection of necrotic tissue, as thoroughly as possible, are the mainstays of surgical treatment. Amputation of an extremity may be necessary [1–3].

Adjunctive treatment

Patients in shock or with multiple organ failure should receive advanced life support in intensive care units. Hyperbaric oxygen therapy has been attempted for gas gangrene [1].

References