Necrotizing Fasciitis with Subcutaneous Emphysema in a Diabetic Patient

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Brief History

An 80-year-old female was a victim of diabetes mellitus (DM). She suffered from progressive painful swelling of the right calf ascending from a scratched wound over her ankle joint 3 days ago before this admission. On arrival of our emergency department, the vital signs were respiratory rate 19/min, blood pressure 107/69mmHg, heart rate 96/min and body temperature 37.5°C. Physical examination revealed essential normal except pale conjunctiva and swelling, erythematous change, local heat and tenderness over the right ankle ascending to the right calf. The laboratory data showed white blood cell counts 29700/mm³ with neutrophil 92%, hemoglobin 8.0g/dL, platelet counts 370×10³/mm³, blood urea nitrogen 72mg/dL, creatinine 1.6 mg/dL, alkaline phosphate 311 U/L, lactic dehydrogenase 211 U/L, and creatinine kinase 117 U/L. The plain film showed air within subcutaneous soft tissue of the right lower leg (Figure A and B). Antibiotics with cefazolin, gentamycin and metronidazole were prescribed and surgical intervention with debridement and fasciotomy was performed by the plastic surgeon under the impression of necrotizing fasciitis (NF) with subcutaneous emphysema of the right lower leg. The culture of biopsy yielded mixed floras, including Morganella morganii, Peptostreptococcus anaerobius and Peptostreptococcus magnus.

Comment

NF is an uncommon soft-tissue infection, usually caused by toxin-producing, virulent bacteria, which is characterized by widespread fascial necrosis with relative sparing of skin and underlying muscle. Radiology may play an important role in early diagnosis and treatment planning in whom clinical and laboratory findings are commonly equivocal and nonspecific. The incidence of NF increased from 0.08 cases/100,000 population in 1992 to 0.49 cases/100,000 population in 1995. Factors that predispose patients to this life-threatening complication, including obesity, malnutrition, cancer, alcoholism, drug abuse, peripheral vascular disease, DM, immunosuppressive therapy, cardiac and pulmonary disease increased the risk of disease. Group A Streptococcus is the most bacteria in a monomicrobial infection, but a polymicrobial
infection with a variety of Gram-positive, Gram-negative, aerobic and anaerobic bacteria is more common. Diagnostic radiographic testing is often helpful, including the use of plain radiographs, computed tomographic (CT) scan and magnetic resonance imaging. Soft tissue gas, detected clinically or radiologically, is a classic sign. Rates of subcutaneous air in NF ranged from 17% to 57% by plain film. Sonography is used for detecting the swelling of soft tissue. CT is more sensitive than plain film for detecting subcutaneous air. Magnetic resonance imaging is a tool for differentiating cellulitis from NF. An overall mortality rate is up to 50% and delayed (1 to 3 days) excision of necrotic tissue will lead to 75% deaths in a serial review. Successful treatment for NF will include early diagnosis, aggressive surgical debridement with fasciotomy, several broad-spectrum antibiotics for aerobic and anaerobic infections, supportive intensive care and hyperbaric oxygen therapy, especially for an anaerobic infection.

References