A case of Aggregatibacter actinomycetemcomitans endocarditis presenting as quadriceps myositis

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Abstract

An 80 year old female was admitted with an eight week history of fever associated with painful swelling of her right thigh, and a long history of poor dentition. Culture of blood stained fluid aspirated from the abscess grew Aggregatibacter actinomycetemcomitans (Aa) sensitive to ampicillin and cephalosporins. Transoesophageal echocardiography indicated endocarditis. Four weeks treatment with intravenous ceftriaxone and appropriate dental care was followed by full recovery.

Case Report

An 80 year old female was admitted with an eight week history of fever associated with painful swelling of her right thigh, and a long history of poor dentition. Culture of blood stained fluid aspirated from the abscess grew Aggregatibacter actinomycetemcomitans (Aa) sensitive to ampicillin and cephalosporins. Transoesophageal echocardiography indicated endocarditis. Four weeks treatment with intravenous ceftriaxone and appropriate dental care was followed by full recovery.

Investigations

Hb 84 g/L (RR 110-165g/L), WBC 15.9x10⁹ (RR 3.5-11x10⁹), Neutrophils 13.52x10⁹ (RR 2.8-8x10⁹), CRP 327 mg/L (RR<5 mg/L), glucose 23.3 mmol/L (RR 3.7-8 mmol/L), Hba1c 9.3% (4-6%), Albumen 22g/L (RR 35-50), Alkaline phosphatase 151U/L (RR 53-141)

Blood culture - no growth (Figure 1).

Aspiration from the abscess yielded blood stained fluid. After 2 days of incubation, a small Gram-negative bacillus was cultured. This was identified by Vitek-2 as Aggregatibacter actinomycetemcomitans (Aa) sensitive to ampicillin and cephalosporins. From disc sensitivity tests it was reported sensitive to antibiotic agents in endocarditis in 1964 by Mitchell and actinomycetemcomitans was first described as an etiological agent in endocarditis in 1964 by Mitchell and Gillespie.4 Kaplan2 described 15 personal cases of Actinobacillus actinomycetemcomitans where infection was confined to the head or cardiac valves or lower respiratory tract, and reported that 21 out of 57 documented up to 1989 had poor dentition. Pasturel2 recorded 99 cases of endocarditis reported up to 2004, and found 75% of patients had previous heart disease before infective endocarditis, the portal of entry of which was usually the oral cavity. The aortic valve is most commonly involved. The onset of endocarditis is usually insidious, with a mean duration of 13 weeks symptoms before diagnosis is confirmed by blood cultures incubated for >5 days. Intermittent fever, weight loss, peripheral signs of endocarditis, anaemia and microscopic haematuria were frequently noted.

Complications occurred in 63% of patients, with emboli being the most common. The sur-

Discussion

Aggregatibacter actinomycetemcomitans (previously Actinobacillus actinomycetemcomitans) is a gram-negative cocobacillus, found as an oral commensal, which may also cause severe infections in the oral cavity, particularly periodontitis. It is one of the HACEK group of microorganisms which cause 3% of all cases of infective endocarditis (IE)1 A. actinomycetemcomitans is a virulent microorganism with many protective mechanisms; it produces a leukotoxin which kills neutrophils and monocytes, it inhibits antibody production and activated T-suppressor cells, it is resistant to complement mediated killing, and has immunosuppressive factors that inhibit blastogenesis. The micro-organism is relatively susceptible to antibiotics active against gram negative bacteria.2 A. actinomycetemcomitans infection at sites other than oral cavity or cardiac valves is rare.1 Direct spread from the oral cavity, commonly in the setting of clinical periodontitis, to the jaw, lower respiratory tract, parotid and thyroid glands and brain2 are documented. Infection of superficial lesions with oral flora, usually in the setting of trauma, is another common cause of infection with this rare organism.2 Widespread peripheral emboli from haematogenous spread in the presence of endocarditis is well documented.1 Although non oral infections are rare, bacterial endocarditis is the commonest infection outside the oral cavity. A. actinomycetemcomitans was first described as an etiological agent in endocarditis in 1964 by Mitchell and Gillespie.4 Kaplan2 described 15 personal cases of Actinobacillus actinomycetemcomitans where infection was confined to the head or cardiac valves or lower respiratory tract, and reported that 21 out of 57 documented up to 1989 had poor dentition. Pasturel2 recorded 99 cases of endocarditis reported up to 2004, and found 75% of patients had previous heart disease before infective endocarditis, the portal of entry of which was usually the oral cavity. The aortic valve is most commonly involved. The onset of endocarditis is usually insidious, with a mean duration of 13 weeks symptoms before diagnosis is confirmed by blood cultures incubated for >5 days. Intermittent fever, weight loss, peripheral signs of endocarditis, anaemia and microscopic haematuria were frequently noted.

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Figure 1. Magnetic resonance imaging scan (T1 fat saturated image) detected diffuse oedema with contrast enhancement involving the right extensor thigh muscles compatible with infection or myositis.

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Surgery rate was 23.5%. The overall mortality rate was 18%. Of the cases, 76.5% were cured with antibiotics alone, including a third-generation cephalosporin, the current recommended therapy, or a combination of a penicillin and an aminoglycoside. Antibiotic therapy duration of at least 4 weeks is recommended. Surgical therapy is usually required for haemodynamic reasons.

The presence of *A. actinomycetemcomitans* on aspiration of the thigh abscess raised the possibility of endocarditis, though no murmur was clinically detectable and blood cultures were negative. This case is a most unusual initial presentation of *A. actinomycetemcomitans* endocarditis.

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