

GROUP G STREPTOCOCCAL ENDOCARDITIS AND BACTERAEMIA - A REPORT OF 3 CASES

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ABSTRACT

Three patients with Group G Streptococcal infection presenting with endocarditis and septicaemia are reported. All had underlying cardiac disease, and one had diabetes mellitus and a colonic carcinoma. Our three patients responded to intravenous crystalline penicillin.

Keywords: Group G Streptococcus, Response to penicillin

SINGAPORE MED J 1990; Vol 31: 451 - 453

INTRODUCTION

During the past twenty years, serious Group G Streptococcal infections have received increasing attention in the literature. The development of coagglutination and latex agglutination grouping reagents now permits Group G streptococci to be differentiated from other beta haemolytic groups. Group G streptococcus is an important cause of endocarditis, septicaemia and septic arthritis. Over a five year period from 1984-1989, we have treated five cases, of which four had endocarditis and one was septicaemic. In this report, we describe three of the five cases. The case notes of the other two patients are not available. Despite reported dissociations between in-vitro sensitivity and clinical response to penicillin⁽¹⁾, our cases responded to penicillin therapy alone.

CASE REPORTS

Case 1

A 32 year old male with no past history of medical illness was admitted in April 1984 for fever with chills and rigors of 2 days' duration. He also had right knee pain.

Examination showed that he was febrile with a temperature of 40.5°C and a pulse rate of 125/min. He was not hypotensive. Tenderness of the right knee and ankle was felt on movement of both joints. They were not warm. Petechial haemorrhages were found in the conjunctiva, hard palate and skin of the back of his chest. Purpuric spots were present on his finger pulps.

A pansystolic murmur 3/6 and mid systolic click were heard over the mitral area. He was not in cardiac failure. Hepatosplenomegaly was not found. His total white count (TW) was $14 \times 10^9/L$ with 95% polymorphonuclear cells. The erythrocyte sedimentation rate (ESR) was 106 mm. Blood cultures grew Group G streptococci. His blood urea, electrolytes and glucose were normal. Anti-streptolysin O titre was more than 800 Todd Units. His chest X-ray and electrocardiogram (ECG) were normal. Two-dimensional echocardiogram showed mitral valve prolapse and vegetations. He was given 16 megaunits of intravenous crystalline penicillin daily.

During the stay, he developed polyarthralgia of other joints - shoulders, elbows, left knee and ankle. His left knee developed an effusion. Aspiration yielded 20 ml of straw-coloured fluid which did not grow any organism on culture. He responded to a 6-week course of penicillin and remained well after discharge.

Case 2

An 84 year old lady was admitted in April 1984. She was found to be drowsy and febrile by family members. There was no past history of illness. On examination, she had a temperature of 38°C. Her blood pressure was 130/85. There was no skin infection. Jaundice was not noted. Her apex beat was displaced just lateral to the mid-clavicular line in the 5th left intercostal space and was heaving in nature. A pansystolic murmur 3/6 was heard over the mitral area and radiating to the axilla. She was not in cardiac failure. Examination of her abdomen was normal. She was drowsy and responded only to simple commands. There was no sign of meningitis. The right elbow was tender on movement. She was given intravenous ampicillin.

A few days later, she had one episode of atrial fibrillation and went into mild left ventricular failure. Investigations showed a TW $22 \times 10^9/L$, haemoglobin

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(Hb) 13.9%. ESR 77 mm and a random blood glucose of 269mg%, subsequent 2-hour post prandial blood glucose was 306mg%. Blood cultures grew Group G streptococci. ECG showed ischaemic changes and chest X-ray showed cardiomegaly with pulmonary congestion. Two-dimensional echocardiogram demonstrated vegetations attached to the outflow tract of the ventricular septum. All valves were normal. The antibiotic was changed to crystalline penicillin. Her diabetes mellitus was treated with soluble insulin.

She responded well to a 6-week course of penicillin. However, she developed bleeding per rectum. Proctoscopy and per rectal examination did not show any mass or piles. She continued to have a few episodes of bleeding. Barium enema showed a recto-sigmoid colonic tumour. A high anterior resection was done. Histology showed moderately differentiated adenocarcinoma with infiltration into serosal tissue. She was discharged well after three months' stay in hospital. She passed away in 1986 from carcinoma of the colon.

Case 3

A 69 year old retired clerk was admitted in March 1989 for exertional dyspnoea, bilateral ankle swelling, right hip pain and fever for one week. He had had multiple admissions in the past for congestive cardiac failure and paroxysmal atrial tachycardia. There was no history of diabetes mellitus or hypertension. Clinically, the patient was febrile and was in atrial fibrillation and congestive cardiac failure. The apex beat was displaced to the 6th left intercostal space, anterior axillary line was thrusting in nature. No abnormality was found in the abdomen. His right hip was restricted in movement because of pain. He went into shock on the second day of admission and required inotropic support.

Relevant investigations showed a raised TW 12.2 X 10⁹/L, Hb 13.9g%, ESR 65 mm, ECG right bundle branch block and atrial fibrillation, chest X-rays cardiomegaly with congestion. Blood culture grew Group G streptococci. Two-dimensional echocardiogram revealed global hypocontractility, hypertrophy of the left ventricle, mitral valve prolapse, a normal aortic valve, clots extending from left atrial appendage to left atrium, dilated right atrium, thickened right ventricle wall and no vegetations. He was treated with intravenous crystalline penicillin for 6 weeks and gentamicin for 2 weeks, and was anticoagulated. He responded to treatment. A technetium-99 bone scan of the right hip showed an increased activity in the acetabular region indicating a possible septic process. His right hip pain subsided eventually and he was discharged.

Discussion

The first description of Group G streptococci was in 1935 when Lancefield and Hare isolated the organism from vagina of patients with puerperal sepsis. Subsequently, a number of other infections by this organism were reported. Group G streptococci are normal inhabitants of the skin, oropharynx, gastro-intestinal and female genital tract. A wide variety of infections - septicaemia, endocarditis, meningitis, empyema, septic arthritis or puerperal sepsis has been described⁽¹⁻¹¹⁾.

The human skin is frequently colonized by these organisms. They are responsible for the various cutaneous infection such as cellulitis and wound infection.

This form of infection responds rapidly to antimicrobial therapy.

Group G streptococcus has been recognized as a cause of neonatal sepsis^(2, 3). This infection occurs in premature or low birth weight infants especially in the setting of prolonged rupture of membrane. The source of infection is from the birth canal. Infants with this infection may develop respiratory distress, shock or disseminated intravascular coagulation.

Septic arthritis due to this organism very often occurs in joints previously damaged by trauma or underlying diseases such as rheumatoid arthritis or in prosthetic joints^(4, 5). The clinical course is usually protracted with recurrent sterile joint effusion which requires frequent drainage. The response to antimicrobial therapy is slow despite in-vitro susceptibility.

Infection of the bloodstream alone is a common form of infection. It usually responds favourably to antimicrobial therapy.

Group G streptococcal endocarditis seems to affect patients in the older age group, especially if there is an underlying illness. Two of our patients (Cases 2 and 3) illustrate this point. Although native or prosthetic valves may be involved, the left heart valves are more commonly affected. As in the previously described cases, our patients had acute onsets of the illness. This is unlike other streptococcal cardiac infections where progression of the disease is more gradual. Rolston⁽⁶⁾ advises against beta-lactam antibiotic monotherapy despite in-vitro sensitivity.

Group G streptococcal infection is often associated with an underlying disease such as malignancy, diabetes mellitus or alcohol abuse^(1,4,7,9). It has been found to be associated with malignancy with a frequency ranging from 21 to 65%.⁽⁶⁾ This raises the possibility that impaired immunity may be a factor in the pathogenesis of this infection.

The main portal of entry is the skin. The other sites include the oropharynx, lower gastrointestinal and genital tracts. Group G streptococci are susceptible in-vitro to various antimicrobial agents such as penicillin, cephalosporins, vancomycin and erythromycin. Combinations of gentamicin with the above have been shown to be synergistic in action. However, varying degrees of tolerance to penicillin and vancomycin have been reported. Lam and Bayer emphasized that despite in-vitro effectiveness of penicillin, clinical response to parenteral penicillin may be poor⁽¹⁾. In such a situation, combinations of gentamicin with a beta-lactam antibiotic or rifampicin with vancomycin have been recommended. In general, most infections caused by Group G streptococci respond rapidly to antimicrobial therapy. However, deep seated infections such as endocarditis and septic arthritis probably require more aggressive therapy with a bactericidal antimicrobial combination⁽⁶⁾. All three cases reported here had underlying cardiac disease. The second case also had diabetes mellitus and a recto-sigmoid carcinoma with the gut being the most likely portal of entry. The source of infection was not obvious in the other two cases. All three had some form of arthralgia or arthritis. The two cases of endocarditis, unlike those in Lam and Bayer's series⁽¹⁾, responded well to penicillin therapy alone. A combination of penicillin and an aminoglycoside or vancomycin may be considered if there is no clinical response with penicillin alone⁽¹²⁾.

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