

Granulicatella adiacens: a rare cause of neonatal pneumonia

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ABSTRACT

Granulicatella adiacens is a Gram positive, nutritionally variant streptococcus, occurring as a normal commensal in oral cavity, intestine and genitourinary tract of humans. Infections in these areas can lead to endovascular, central nervous system, oral, bone and joint and urogenital tracts infections. This case report describes a male infant found to have *Granulicatella adiacens* sepsis. The patient was successfully treated with combination antimicrobial therapy.

Keywords:

Gram positive cocci; sepsis; infective endocarditis

INTRODUCTION

Nutritionally variant streptococci are fastidious, facultative anaerobic, catalase negative, Gram positive cocci.¹ The genus *Granulicatella* has three species, *G. adiacens*, *G. elegans*, and *G. balaenopterae* while *G. balaenopterae* has not been found to be infectious in humans.² They are the normal flora of upper respiratory, gastrointestinal and genitourinary tract of humans. *G. adiacens* has been known to cause bacteremia, endocarditis, CNS, ocular, and bone and joint infections.³ Infections by *G. adiacens* are mostly reported in immunocompromised patients, with the most common infections being sepsis and endocarditis.⁴ Non-group B or D streptococci cause around 1% of cases of early-onset neonatal sepsis; the condition remains primarily associated with *Strep. viridans*.³ This report describes sepsis by *G. adiacens* in a young male infant with congenital heart disease. Early recognition and recovery of the organism through blood culture facilitated successful treatment by combination antimicrobial therapy.

CASE REPORT

History: 1-month-old male infant was brought to the emergency department with complaints of coughing and decreased oral intake for two days and two episodes of central cyanosis occurring at the day of presentation. Baby was delivered preterm at 31 weeks due to premature rupture of membranes and urinary tract infection in the mother. He remained admitted to the nursery for the first four days of life and was discharged on intravenous ampicillin and cefotaxime suspecting

sepsis due to maternal history of infection, the course of which was completed. He had been otherwise well previously except for a history of occasional constipation since birth.

Physical examination: Physical examination revealed a well thriving, warm and well perfused baby at room air with mild tachypnea and otherwise normal vitals. He had bilateral coarse crackles in his lungs without any signs of respiratory distress. First and second heart sounds were normal with a grade 3/6 systolic murmur at the lower left sternal border and midclavicular region, not identified at birth. Other systemic examination was unremarkable.

Hospital course and laboratory investigations: A few hours after admission, baby had an episode of generalized cyanosis with saturation dropping to 60% at room air that resolved with the aid of supplemental oxygen. His initial chest X-ray was unremarkable. Septic workup showed a TLC of 10k/uL, with a lymphocytic predominance of 70% and neutrophils 21%, and a platelet count of 569k. Echocardiography was done due to evidence of cyanosis and added heart sounds, which revealed mild coarctation of aorta, moderate sized PDA, mild tricuspid regurgitation, moderate secundum ASD, with mild to moderate pulmonary hypertension for which he was treated with diuretics, digoxin, paracetamol and vasodilators, along with intravenous cefotaxime and ampicillin for suspected sepsis. During the next few days the baby developed respiratory distress and had episodes of cyanosis while crying. Repeat chest X-ray showed right upper lobar pneumonia following which his antibiotics were changed to meropenem and linezolid to which he

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gradually showed improvement. Within 5 days of admission, his routine blood culture sent for investigation of sepsis revealed growth of *Granulicatella adiacens*, which was sensitive to linezolid but resistant to cephalosporins and some penicillins. Echocardiography was repeated to rule out infective endocarditis which came out to be negative. Patient showed significant improvement and was discharged on the same therapy with the advice to follow up.

DISCUSSION

Granulicatella species were discovered by Frenkle and Hirsch in 1961 and were termed nutritionally variant streptococci (NVS) due to their fastidious nature, characteristic growth requirement and the ability to grow in satellite colonies supported by growth of other organisms such as *Staphylococcus aureus* and Diphtheroids on culture media.⁵ *G. adiacens* is a normal commensal of human mucosal surfaces but can be a source of bacteremia, endocarditis and genitourinary infections.⁶ *G. adiacens* bacteraemia has also been reported in association with early onset neonatal sepsis with maternal vaginal carriage.³ It is rarely diagnosed due to difficulties in isolation because of its fastidious nature, requiring the supplementation of pyridoxine for its growth.^{4,7} Its resistance to beta lactam antibiotics has been described.⁸

Reports of infections caused by *G. adiacens* are becoming more frequent, possibly because of increasing awareness and isolation. Those with a compromised immune system, such as neonates, are at an increased risk of infection. However, because of early detection and the use of susceptible antibiotics, our patient had a favourable outcome.

Though it is a normal commensal, its spectrum of infections with *Granulicatella* species seems to be expanding. Infections are associated with significant

morbidity and mortality. Clinical course is more severe than viridans Streptococci. High index of suspicion and vigilance is needed because of its fastidious nature, slow growth rate, difficulty in isolation on culture media and multiple antibiotic resistance.^{4,9}

Granulicatella adiacens, being a source of severe pneumonia in early infancy, was fortunately in our case, timely identified by means of routine blood culture, and the patient showed good response to sensitive antibiotics on which he was discharged home.

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