Other full case

Actinobacillus actinomycetemcomitans endocarditis in a 1.5 year old toddlerAyelet Shles,¹ Baruch Wolach,¹ Alex Levi,² Giora Gottesman³¹ Department of Pediatrics, Meir Hospital, Kfar Saba, Israel² Department of Cardiology, Meir Hospital, Kfar Saba, Israel³ Pediatric Infectious Diseases – Sapir Medical Center, Meir Hospital, Kfar Saba, Israel

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Summary

The authors report a 1.5-year-old girl who developed *Actinobacillus actinomycetemcomitans* (AA) endocarditis involving the pulmonic valve. She had a congenital cardiac abnormality, but no history of dental manipulation. The case illustrates an uncomplicated course with three unique features; the youngest reported infant with endocarditis caused by AA with vegetation on the pulmonic valve. She underwent a benign course with complete recovery.

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BACKGROUND

Actinobacillus actinomycetemcomitans (AA) is grouped in the HACEK group of bacteria (*Haemophilus* species, *Actinobacillus actinomycetemcomitans*, *Cardiobacterium hominis*, *Eikenella corrodens* and *Kingella kingae*), which is considered to be the most common cause of paediatric Gram-negative infective endocarditis.¹

Members of this group of bacteria cause 3% of all cases of paediatric endocarditis,¹ and possess similar traits; they are all small, slow-growing Gram-negative bacteria, which produce similar clinical syndromes that are often insidious.

The HACEK microbes are frequent colonizers of the oral cavity and may cause periodontal infections.² In addition to endocarditis, AA may cause head and neck infections, brain abscesses, pneumonia, soft tissue infections and urethritis.

AA was first described as an aetiological agent in endocarditis in 1964, by Mitchell and Gillespie.³ Only a few additional cases have been reported. A review based on a MEDLINE search of all previous reports of AA endocarditis found 102 such cases. The youngest patient mentioned in this review was 7 years old.⁴ Another review of HACEK endocarditis in children reported five additional cases of AA endocarditis, with the youngest patient being 7 years old.⁵

CASE PRESENTATION

A 1.5-year-old infant was admitted with a 7-day history of fever, chills and general weakness. She had undergone open valvuloplasty 6 months prior to the current hospitalization, due to a congenital cardiac malformation; double outlet, right ventricle, VSD and pulmonic stenosis. The postoperative course was uncomplicated.

She had no history of dental manipulation.

An initial physical examination showed a fever of 40°C and the cardiac examination revealed grade 3/6 systolic and diastolic murmurs. There were no peripheral signs of endocarditis.

INVESTIGATIONS

The white blood cell count and platelet count were normal. The haemoglobin was 9.8 g/dl, and the erythrocyte sedimentation rate was 105 mm/h.

There was no microscopic haematuria and serum creatinine was normal.

The transthoracic echocardiogram (TTE) revealed pulmonic valve vegetation.

Six blood cultures were drawn on the day of admission, and one of them grew an *actinomycetemcomitans* on the seventh day following admission. The organism was sensitive to ampicillin and ceftriaxone.

DIFFERENTIAL DIAGNOSIS

Most common organisms that cause infective endocarditis in children are Gram-positive cocci, including viridans group (α -haemolytic) streptococci (*Streptococcus sanguis*, *Streptococcus mitis* group, *Streptococcus mutans*, etc), staphylococci and enterococci. Enterococcal endocarditis occurs much less frequently in children than in adults. Less common are Gram-negative organisms such as the HACEK group. Culture-negative infective endocarditis comprises around 6% of cases in children.¹

TREATMENT

On the first day of hospitalization, intravenous garamycin, vancomycin and cloxacillin were initiated. This regimen was replaced by ceftriaxone according to sensitivity.

OUTCOME AND FOLLOW-UP

The patient became afebrile on the second day. After 6 days, a repeated TTE was conducted and revealed no change. Repeated blood cultures were sterile. The patient was discharged and continued parental antibiotics as an outpatient for a total of 4 weeks.

Twenty-two days from initiation of treatment, the TTE showed no vegetation and the patient was asymptomatic.

DISCUSSION

AA is a very rare cause of endocarditis, and only a few well-described cases have been reported. AA is a fastidious, Gram-negative coccobacillus that forms part of the normal oral flora and can gain entry to the vascular compartment via dental infection, dental procedures or spontaneous bacteraemia resulting from mastication – the latter being the most frequent.⁶ Our patient did not exhibit any oral-dental insult.

The mean age of patients previously reported with AA endocarditis was 46 years.⁴ The youngest patient described was 7 years old.⁴ Our case of AA endocarditis presents the youngest reported patient diagnosed with this condition.

Most children with HACEK endocarditis have pre-existing cardiac abnormalities similar to our patient. We have not found any reported case of pulmonic valve involvement in AA endocarditis. Among reported cases of AA endocarditis in adults and children, the aortic and mitral valves were involved most often.⁴

Our patient underwent a benign course, although patients diagnosed with AA endocarditis are at great risk for complications. An explanation for the higher prevalence of complications with AA may be attributed to the relatively

long duration of infection before diagnosis.⁷ The isolated pathogen in the current case was highly susceptible to antibiotics and no B-lactamase production was noted as reported in previous cases of AA isolations.⁸

Learning points

- ▶ AA endocarditis can cause a mild course.
- ▶ AA endocarditis can involve the pulmonic valve.
- ▶ AA endocarditis can occur in toddlers.

Competing interests None.

Patient consent Obtained.

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