Streptococcus Pneumoniae Infective Endocarditis and Meningitis in an Unvaccinated Child

Gabriel Bahrami, Maram Sati, Nathaniel Robbins, Janine Arruda

UH Rainbow Babies & Children's Hospital, Case Western Reserve University School of Medicine, Cleveland, OH, USA

Background

- *Streptococcus pneumoniae* invasive infections can lead to significant morbidity and mortality in children under 5 years of age. (1)
- *Streptococcus pneumoniae* infective endocarditis (IE) in children is uncommon and has serious complications. (2)
- It is unclear if the vaccination status could predispose to *Streptococcus pneumoniae* endocarditis. (1)
- We report a case of pneumococcal IE and meningitis in an unvaccinated child that required urgent surgical intervention for valve repair.

Case Report

- A 5-year-old unvaccinated previously healthy female was admitted to the hospital for prolonged fever and encephalopathy.
- PCR blood culture and CSF resulted positive for *Streptococcus pneumonia.*
- She was started on intravenous Ceftriaxone but remained febrile.
- Cardiac examination was remarkable for a new grade III/VI systolic murmur heard best at left lower sternal border, apex, left axilla and back.
- Chest X-ray showed cardiomegaly and pulmonary edema.
- Echocardiogram demonstrated a 17 x 7 mm hypermobile mass attached to the anterior mitral valve (MV) leaflet suggestive of vegetation (Fig. 1 and 2) and severe MV regurgitation (Fig. 3).
- Brain MRI revealed punctate foci of diffusion restriction, suggestive of acute to subacute ischemic changes, likely from infective thrombi.
- Urgent surgical vegetation removal and MV repair were recommended and results were excellent.

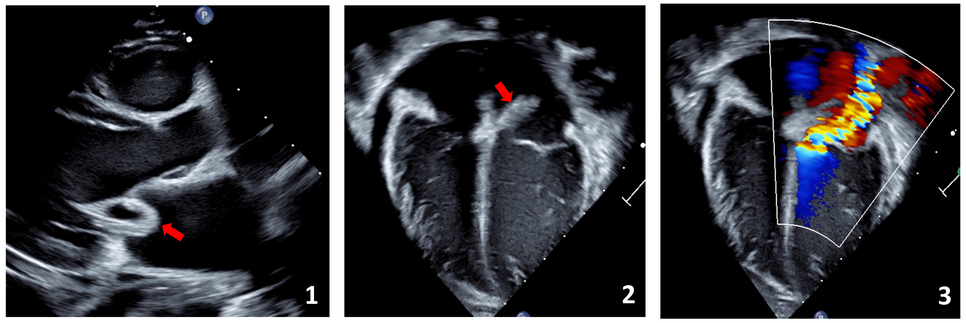

Figure 1 and 2: A pedunculated hypermobile mass (red arrow) is seen on parasternal long-axis and 4-chamber views attached to the anterior leaflet of the MV suggestive of vegetation

Figure 3: Severe MV regurgitation through a 7 mm hole on the anterior MV leaflet by color

Discussion

- The incidence of invasive *Streptococcus pneumoniae* infections has declined since the development of the pneumococcal conjugated vaccine. (3)
- The use of PCV13 in the United States has effectively decrease the incidence of invasive pneumococcal infections in the pediatric age group and its benefit has extended protection to older and vulnerable adults. (4)
- *Streptococcus pneumoniae* endocarditis in pediatric age patients accounts for up to 7% of cases of IE. (2)
- It is more common in those with underlying congenital heart disease, specifically lesions that involve high-velocity jets of blood flow such as ventricular septal defects. (1)
- Fever is the most common presentation but in more than 50% of cases, meningitis, pneumonia, sinusitis or mastoiditis is diagnosed. (3)
- Our patient was encephalopathic on presentation for which lumbar puncture was performed and empiric treatment for suspected meningitis was initiated.
- Persistent fever spikes despite antibiotic treatment and the new onset murmur prompted the echocardiogram.
- Echocardiography is the main imaging modality for diagnosing IE with a reported sensitivity up to 80%. (5)
- Pneumococcal IE mortality is as high as 60% if untreated early in the course of the illness. (3)
- Optimal therapy for pneumococcal endocarditis has not been established for adults or children. (5)
- Resistance to both penicillin and ceftriaxone have been reported and treatment with vancomycin and rifampin have been more effective. (1)
- Presence of a large pedunculated vegetation on the anterior MV leaflet, development of acute severe MV regurgitation with pulmonary edema and septic emboli prompted urgent surgical intervention.

Conclusions

- Pneumococcal endocarditis in children is unusual but often has serious complications.
- The diagnosis should be considered in an unvaccinated child with a new onset murmur in the setting of an invasive pneumococcal infection.
- Echocardiography is the main imaging modality to diagnose IE.
- Early diagnosis and treatment can prevent catastrophic outcomes.
- Educating parents about the importance immunization is crucial.

References

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