Otitis media (OM) is a common pediatric infection, and poses a major healthcare burden. Streptococcus pneumoniae is an important pathogen, for which vaccination is currently available.

We showed that Spn incidence rate from OM samples in immunized children decreased, while antibiotic susceptibility rates increased during the post-PCV13 years, when compared with the pre-PCV years.

Our findings reinforce the local policy to choose amoxicillin as the first line treatment for AOM.

Introduction

- Pneumococcal conjugate vaccines (PCVs) were introduced into the Israeli National Immunization Program in 2009 (PCV7) and 2010 (PCV13).

Study Aims

- To study the effect of PCVs on the occurrence and antibiotic susceptibility patterns of S. pneumoniae (Spn) cultures, obtained from children with otitis media (OM) over the years before, during, and after the PCVs.

Methods

- Spn cultures from OM in children <8 years were retrospectively identified between 2007-2014.
- Middle ear fluid (MEF), subperiosteal abscesses, blood and CSF cultures were obtained whenever indicated, and in line with the local protocol.
- Antibiotic susceptibility (MIC values sensitive, intermediate or resistant: Penicillin, ≤0.06, 0.125-1 and ≥2 µg/L, Erythromycin, ≤0.25, 0.5 and ≥1 µg/L, Trimethoprim sulfamethoxazole, ≤10, 20-40 and ≥80 µg/L, Ceftriaxone, ≤1, 2 and ≥4 µg/L.
- We studied the trend over the study years: Pre-PCV years (2007-8); Transition years (2009-11); and the Post-PCV13 years (2012-4).

Results

- 134 eligible children were included (162 cultures); 76 boys (57%) and 58 girls (43%).
- There was a downward trend in the annual rate of Spn cultures in the pre-PCV years, transition years, and post-PCV13 years (p=0.08, p=0.04) (Figure 1).
- Antibiotic susceptibility patterns significantly changed, with a marked tendency to become more sensitive to antibiotic agents (Figure 2A, 2B, 2C).

Discussion

- In PCV immunized children, Spn incidence rate from OM cultures decreased, while Spn antibiotic susceptibility increased during the post-PCV13 years, when compared to the pre-PCV years.
- All the isolated Spn strains from the post-PCV13 years were penicillin-susceptible, which reinforces the local policy to select amoxicillin as the first line treatment, if antibiotic therapy is considered for OM treatment.
- The proportion of Spn in pediatric OM decreased following the introduction of PCVs.

Further studies are needed to maintain the surveillance of the remaining circulating Spn strains in the post-vaccine era.