INTRODUCTION

PCV10 was introduced in 2010 at the Bulgarian Childhood Immunization Program.

- Prior the vaccination period data was collected only from invasive S. pneumoniae isolates
- Penicillin resistant serotypes were 19F, 6B, and 19A and they were about 30% and erythromycin - 19% of all invasive strains.
- After the vaccine, data from patients with invasive (IPD) and non-invasive (NIPD) pneumococcal diseases has shown that most abundant serotypes were - 3, 19F and 7F. Among respiratory isolates prevalent were some emergent serotypes like 15A/B/C, 19A and 6C and vaccine type occurrence decreased significantly.
- Antimicrobial nonsusceptibility rates for clinical isolates during 2011/2016 were high for oral penicillin - 46.5%, trimethoprim-sulfamethoxazole - 45.4%, erythromycin - 43.9%, tetracycline - 37.4%, and multidrug-resistance (MDR) was 44%.

METHODS

- Specimens were collected from vaccinated healthy children n=764, aged >1 to 8 years
- Nasopharyngeal swabs were cultured on Columbia CNA Agar with 5% Sheep Blood and optochin disk, 37°C for 24 hours, in an aerobic atmosphere enriched with CO2.
- Identification of S. pneumoniae was done by the presence of alpha-hemolysis and inhibition by optochin.
- Typing of cultures was made by DNA based methods - conventional PCR with 41 primer pairs and the Oropen S.PneumoStrip kit.
- Antibiotic susceptibility testing was done with the disc-diffusion method for oxacillin, tetracycline, erythromycin, clindamycin, vancomycin, teicoplanin, linezolid, norfloxacin, trimethoprim-sulfamethoxazole (TMP-SMX).
- Interpretation of the results was done by the EUCAST Clinical Breakpoint Tables v. 9.0.

RESULTS

- The total number of isolated strains was 160 (21% culture positive samples).
- All the samples were typed and predominantly there were non-vaccine serotypes - 6C (27%), 24 B/F (12.5%), 3 (11%), 11A/D (10%) and 23A (7.5%).
- Penicillin resistance was low and found in 4% of isolates (serotypes 35B, 19A, 24B/F, 6C, 23A, and 3).
- There was significant resistance to both Erythromycin – 53% and clindamycin – 51%, also high resistance to Tetracycline – 42%.
- Resistant pneumococci to multiple antibiotics MDR strains were from the serotypes: 6C, 24B/F, 23A, 3, 6A, 19A, 15 A/F, 11 A/D, 35B.

CONCLUSIONS

- Serotypes 6C, 24B/F, 23A, 3, 6A, 19A and 35B formed more than 80% of the total number of resistant strains typed and these serotypes are commonly associated with pneumococcal disease in our country.
- Beta-lactams is low in carriage strains and this still is the first choice of therapy.
- High macrolide resistance was observed and that can be a measure for resistant strains from other species of the nasopharyngeal community.
- Combined strategy of vaccination and adequate antibiotic use should prevent future rising of pneumococcal resistance.

REFERENCES


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Antibiotic susceptibility of S. pneumoniae strains, isolated from children carriers, after the introduction of PCV10 in Bulgaria

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