3) Invasive pneumococcal disease among adults before routine infant conjugate vaccinaton in Argentina

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Background and aims: 13-valent pneumococcal conjugate vaccine (PCV13) was introduced into Argentine National Vaccination Program in January 2012 for children under 1 year old with 2 + 1 schedule and a catch up in children between 12 and 24 months. During 2010-2012 we evaluated serotype distribution, antimicrobial susceptibility and serotype coverage of PCV13 and pneumococcal polysaccharides vaccine 23-valent (PPSV23) in adults with invasive pneumococcal disease (IPD).

Methods: Streptococcus pneumoniae (Spn) isolates from sterile fluids were collected in adults >18 years from 27 hospitals in Argentina (7 provinces and Buenos Aires City). Strains received at the National Reference Laboratory were serotyped by Quellung reaction and MICs were determined by agar dilution method (CLSI-2013).

Results: A total of 116 IPD patients were included. The total number of cases for each year was 35 in 2010, 34 in 2011 and 47 in 2012. The distribution by sex was 60 (52%) females and 56 (48%) males. Fifty-four/116 (49%) were >65 years-old. Strains were isolated from specimens of: blood (77.6%), cerebrospinal fluid (14.7%), peritoneal fluid (3.4%), pleural fluid (1.7%), others (2.6%). Pneumonia was the most frequent diagnosis 67.2%, followed by meningitis 15.5%, sepsis 1.7%, peritonitis 1.7% and others 13.9%.

More than 20 serotypes were identified: 7F (11), 1 (11), NT (10), 14 (9), 3 (8), 12F (8), 5 (7), 22F (7), 19A (6), 9V (4), 8 (4), 9N (4), 11A (4), 15B (3), 19F (3), 6A (3), 6C (2), 23F (2), 10A (1), 23A (1), 33F (1), 16F (1), others (6). The distribution of the most common serotypes by age group was: 7F (12.3%), 1 (12.3%), 12F (7.7%), 3 (7.7%), 5 (6.2%), 19A (6.2%) and others (47.6%) in adults 18-64 years old (n=65); and NT (13.7%), 14 (11.8%), 22F (7.8%), 1 (5.9%), 12F (5.9%), 7F (5.9%), 3 (5.9%), 5 (5.9%) and others (37.3%) in adults > 65 years old (n=51). Serotype coverage of PCV13/PPSV23 was 55.2%/82.8% in adults > 18 years old; 64.6%/90.8% in 18-64 years old and 43.1%/72.5% in > 65 years old respectively. Overall, 19% of isolates were penicillin non-susceptible according meningitis break point (MIC > 0.12 mg/L), 16.4% MIC = 0.12-1 mg/L and 2.6% MIC > 2 mg/L; but none of them was non-susceptible by non-meningitis break point (MIC > 4 mg/L). Most isolates penicillin non-susceptible were serotypes 19A, NT, 14 and 6A.

Non-susceptibility rates were: 3.4%/2.6% for meningitis/non-meningitis cefotaxime break-points, 1.7% amoxicillin, 5.2% meropenem, 13.8% erythromycin, 9.5% tetracycline and 34.5% trimethoprim-sulfamethoxazole. All strains were susceptible to rifampin, levofloxacin, chloramphenicol and vancomycin.

Conclusions: This is the first multicentric national study of IPD among adults in Argentina. The six most common serotypes were 7F, 1, NT, 14, 3 and 12F accounted for almost the 50% of the isolates with an average of 55.2/82.8% for PCV13 and
PPSV23 respectively. Almost 20% of isolates were penicillin non-susceptible. A continuous National Surveillance Program of Spn serotypes in adult IPD is warranted to assess future changes in the epidemiology.