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Paper Poster Session I

Focus: Pneumococcus

**Clonal analysis of invasive pneumococci and its relationship with age group and antimicrobial susceptibility. Results of a multicentre study in Spain (2010-2014)**

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**Objectives:** To analyze the clonal composition of *Streptococcus pneumoniae* isolates collected from young and older adults with invasive pneumococcal disease (IPD) in 9 Spanish hospitals.

**Methods:** A prospective, active, hospital-based surveillance of all culture-confirmed IPDs in adults (≥18 years) was performed in 9 Spanish hospitals from August 2010 to May 2014. IPD was considered isolation of *S. pneumoniae* in normally sterile fluids (blood, cerebrospinal fluid, pleural fluid). Serotyping was performed by the Quellung reaction, dot blot assay or real-time PCR. All isolates were genotyped by PFGE (SmaI). Representative isolates of major PFGE pattern were selected for MLST.

**Results:** A total of 878 cases of IDP were included during the study period. Of them, 454 were collected from young adults (18-64 years) and 424 were collected from older adults (>64 years). The most frequent serotypes among young and older adults were: 3 (10.6%, vs 13.2%, NS), 19A (9.7% vs 8.3%), 7F (9.7% vs 4.0%, p=0.001), 8 (8.1% vs 4.2%, p=0.02), 1 (6.8% vs 3.3, p=0.018), 14 (5.1% vs 3.8), 6C (4.2% vs 4.7), 22F (2.6% vs 4.7%), 24F (1.3% vs 4.2%, P=0.08), 11A (3.1% vs 5.0%); and PCV13 serotypes (53.1% vs 42.7%, p=0.02).. Among these age groups the most frequent genotypes were: CC191 (9.5% vs 3.8%, serotype 7F, P=0.001), ST156 (8.6% vs 7.5%, serotypes 14, 9V, 11A, 19A), CC180 (7.5% vs 9.2%, serotype 3), ST306 (6.4%, vs 3.1% serotype 1, P=0.04), CC230 (.5% vs 6.4%, serotypes 24F and 19A, P=0.05), CC63 (5.3% vs 5.0%, serotypes 8, 15A, and 19F), and CC433 (2.2% vs 4.7%, serotype 22F, p=0.04).

Rates of penicillin- and erythromycin non-susceptibility were lower among young than among older adults (23.6% vs 30.9%, p=0.015) and (23.6% vs 29.2%, p=0.06). Penicillin non-susceptibility was associated with CC156 (28.6%, serotype 14, 9V, 11A and 19A), CC230 (18.1%, serotypes 24F and 19A), CC63 (12.2%, serotypes 15A and 19F), CC320 (6.3%, serotype 19A) and CC386 (5.0%, serotype 6C). Although this association was observed in both ages groups, CC156 was most frequent among penicillin-non-susceptible isolates collected from young adults (34.6% vs 23.7 %, p=0.06). These five clones were also the most frequent among macrolide-resistant isolates and accounted for 76.4% of isolates with dual resistance. More than a half (57.1%) of high-level penicillin-resistant isolates (MIC > 0= 2mg/L) belonged to CC156 (serotypes 14, 9V, 19A and 11A), and 20% to CC320 (serotype 19A). Levofloxacin non-susceptibility (3.0%) was mainly associated with CC63 (65.4%, serotypes 8 and 15A) and CC156 (11.5%; serotype 9V).

**Conclusion:** Invasive pneumococci collected from young adults showed lower resistance rates than those isolated from older people. These differences were associated with the clonal composition of invasive pneumococci in each age group.  
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