Serotype distribution of *Streptococcus pneumoniae* isolates from invasive disease in adults aged >=50 years in Galicia, Spain

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Introduction. Conjugate vaccines have been shown to reduce the carriage of vaccine-type strains in vaccinated children, thus reducing opportunities for transmission. Children are a reservoir for pneumococci and contact with young children in a household is a risk factor for invasive disease in adults, therefore the adults are benefiting from the use of the vaccine in children[1]. Moreover, antibiotic sensitivity patterns depend on the distribution of serotypes. Both the usage of antibiotics and uptake of PCV7 are associated with changes in the prevalence of antibiotic resistant *S. pneumoniae* serotypes[2].

Objectives. To determine serotype distribution and susceptibility of *S. pneumoniae* isolates causing invasive pneumococcal disease (IPD) in adults aged >=50 years in Galicia, Spain.

Methods. A total of 140 isolates (one per IPD) collected in the period January to October 2011 were studied. Isolates were serotyped by latex agglutination and Quellung reaction. Susceptibility to penicillin, erythromycin and levofloxacin was determined by broth microdilution following CLSI recommendations.

Results. Of the 140 isolates, 88 (62.9%) came from IPDs in males. Origin of samples was: blood in 126 (90%) cases, cerebrospinal fluid in 6 (4.3%), pleural fluid in 4 (2.9%), and other samples in 4 (2.9%) cases. A total of 30 different serotypes were found, with 71.5% of isolates belonging to seven serotypes: 3 (24.3%), 7F (13.6%), 19A (12.9%), 14 (6.4%), 11A (5.7%), 4 (4.3%) and 6C (4.3%).
These seven serotypes represented 69.0% isolates in patients >=65 years. The table shows by age group distribution of serotypes included in 23v-PPV (23-valent polysaccharide pneumococcal vaccine), in PCV13 (13-valent pneumococcal conjugate vaccine) and of serotypes with >=4 isolates not included in one or both vaccines.
Penicillin MIC for all isolates was <=2 µg/ml, only one isolate (serotype 8) was resistant to levofloxacin (MIC >=8 µg/ml) and 25% isolates were resistant to erythromycin (MIC >=1 µg/ml), being 40% of them serotype 19A.

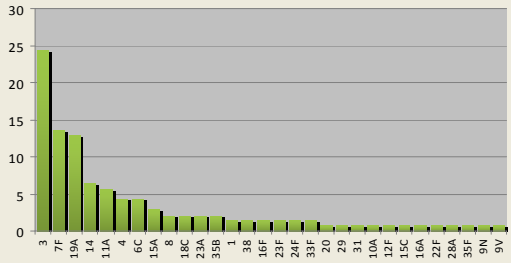

Figure 1. Serotype distribution (%).

Table 1. Distribution of serotypes included and not included in 23v-PPV and PCV 13.

	50-64 yrs		65-74 yrs		>=75 yrs		Total	
n	24		32		84		140	
23v-PPV	20	83,3%	25	78,1%	67	79,8%	112	80,0%
PCV13	19	79,2%	23	71,9%	52	61,9%	94	67,1%
11A[a]	1	4,2%	1	3,1%	6	7,1%	8	5,7%
6C	1	4,2%	1	3,1%	4	4,8%	6	4,3%
15A	1	4,2%	1	3,1%	2	2,4%	4	2,9%

[a]Included in 23v-PPV

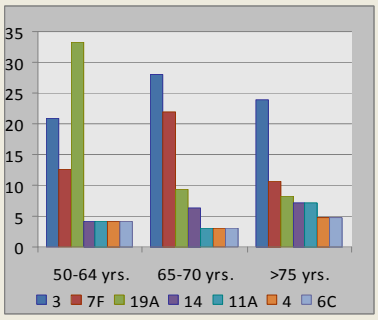

Figure 2. Seven more frequent serotypes by age group.

Conclusions. A total of 82,8% IPDs in adults >=50 years occurred in patients >=65 years, with 79,3% cases caused by serotypes included in 23v-PPV, the vaccine currently used in elderly vaccination campaigns. Since 64.7% (75 out of 116) IPDs in adults ≥65 years were caused by serotypes included in PCV13, this new conjugate vaccine, recently approved by European Commission for use in adults, could offer advantages in preventing IPDs in the elderly.

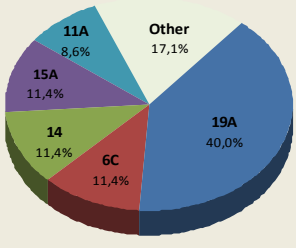

Figure 3. Resistant erythromycin serotypes.

References:
1. Whitney C et al. Decline in invasive pneumococcal disease after the introduction of protein-polysaccharide conjugate vaccine. N Engl J Med 2003; 348(18): 1737-1746.
2. Song J-H, et al. The relationship between pneumococcal serotypes and antibiotic resistance.Vaccine (2012), doi: 10.1016/j.vaccine, 2012.01.091

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