DISTRIBUTION OF SEROTYPES CAUSING INVASIVE PNEUMOCOCCAL DISEASE IN ADULTS IN GALICIA (SPAIN) DURING 2011 AND 2012: ASSOCIATED RISK FACTORS, MORTALITY AND ANTIBIOTIC SUSCEPTIBILITY

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OBJECTIVE. Facing the approval of the 13-valent pneumococcal conjugate vaccine (PCV13) for adults, we explored serotype distribution and antibiotic susceptibility of *S. pneumoniae* isolates causing invasive pneumococcal disease (IPD) in adults (>=18 years) in Galicia during 2011 and 2012, as well as associated risk factors and mortality.

MATERIAL AND METHODS. All blood and CSF pneumococcal isolates from all hospitals in Galicia (Sergas + POVISA) were serotyped by latex agglutination and Quellung reaction. Susceptibility was determined by broth microdilution following CLSI recommendations. Chronic respiratory, heart, liver and renal diseases, diabetes mellitus, immunodeficiencies and HIV were considered risk factors for IPD. Comparisons were performed by the Chi-square test and those variables showing statistical significance in the univariate analysis were included in a multivariate analysis with mortality as dependent variable.

RESULTS. A total of 496 isolates were analyzed. Age of patients was 66.8 +/-17.2 years, with 64.3% males. (Fig. 1)
A total of 42 serotypes were identified, being serotypes 3, 7F, 19A, 14, 6C, 11A, 8, 4 and 22F the most frequent in decreasing order. Up to 62.1% isolates belonged to serotypes included in PCV13 +6C. (Fig. 2 and 3)
Two isolates showed decreased susceptibility to penicillin and cefotaxime. Up to 24.6% isolates were resistant to erythromycin and, among them, serotypes 19A and 6C were the most frequent(Fig. 4). Three isolates were resistant to levofloxacin.
Global mortality was 17.7%, without significant association with the infecting serotype.
In the univariate analysis mortality was significantly ($p<0.05$) associated with liver and renal diseases, non-HIV immunodeficiency, asplenia and age, while in the multivariate analysis only liver disease, non-HIV immunodeficiencies and age >75 years were significantly associated. (table1).

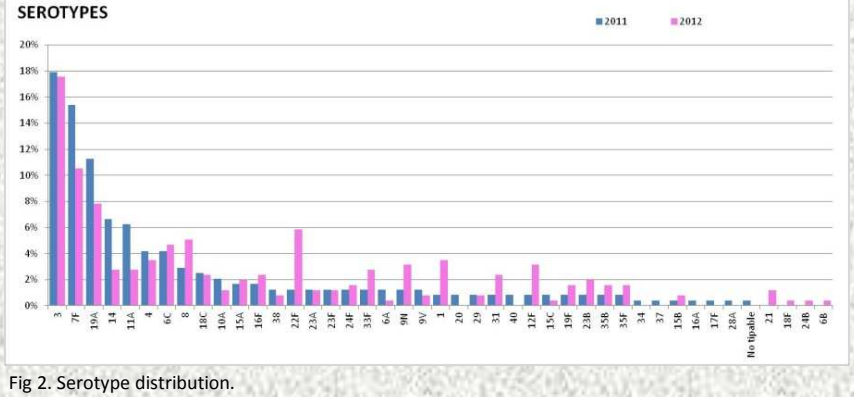

Fig 2. Serotype distribution.

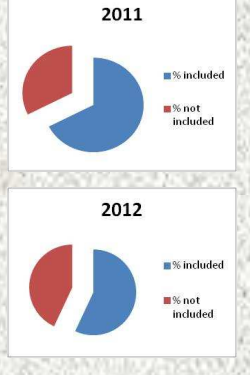

Fig 3. Serotypes incude and not included PCV13+6C.

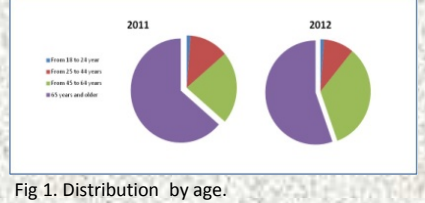

Fig 1. Distribution by age.

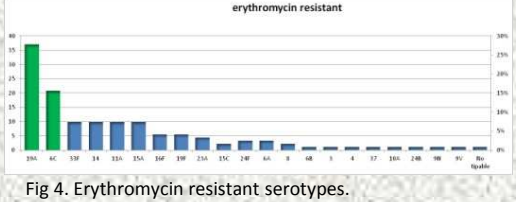

Fig 4. Erythromycin resistant serotypes.

Table 1. OR, p and 95% confidence interval obtained from the regression multivariate logit models.

Multivariate analysis	Odds ratio	p	IC 95%	
Respiratory disease	1,33	0,339	0,74	2,36
Liver disease	3,21	**0,001**	1,65	6,27
Kidney disease	1,63	0,222	0,74	3,57
Asplenia	5,38	0,058	0,94	30,60
Immunodeficiency non HIV	2,85	**0**	1,66	4,91
75 years old and more	2,13	**0,01**	1,20	3,77

CONCLUSIONS. High serotype heterogeneity was found, being serotypes 3, 7F and 19A, all included in PCV13, the most frequent. No isolates with high penicillin resistance were found, with only one isolate showing resistance to cefotaxime. Erythromycin resistance was mainly clustered in serotypes 19A and 6C, and only three strains were resistant to levofloxacin.
Global mortality was 17.7%, without significant association with the infecting serotype.
Liver disease, non-HIV immunodeficiency and age >75 years were statistically associated with IPD mortality in adults >=18 years.

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SERVIZO GALEGO de SAÚDE | Xerencia Xestión Integrada Ferrol

24th ECCMID Barcelona, Spain 10 – 13 May 2014
ESCMID EUROPEAN SOCIETY OF CLINICAL MICROBIOLOGY AND INFECTIOUS DISEASES