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P1812 Emergence of non-PCV10 serotype and resistance to ceftriaxone in pneumococcal isolates in post-vaccine period, Brazil

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Background: *Streptococcus pneumoniae* are a public health problem worldwide. In Brazil, the 10-valent pneumococcal conjugate vaccine (PCV10) has been licensed for routine child immunization since 2010. However, non-PCV10 serotypes, may emerge because of selective pressure due antibiotic use and/or vaccination. The aim of this study was to analyze the frequency of serotypes and susceptibility profile of *S. pneumoniae* isolates from pre- and post-vaccine periods.

Materials/methods: *S. pneumoniae* isolates were obtained from patients with invasive and non-invasive diseases from three tertiary hospitals in Porto Alegre, Southern Brazil. The study period was from 2007 to 2015. The pre-PCV10 period was from 2007 to 2010, while the post-PCV10 period from 2011 to 2015. Identification of isolates was performed by Gram stain, optochin susceptibility and bile solubility. Isolates were serotyped using multiplex PCR and/or Quellung reaction. Antimicrobial susceptibility tests (AST) were performed to penicillin, ceftriaxone and vancomycin using Etest®, and interpreted according to the CLSI.

Results: During the study 522 *S. pneumoniae* isolates were obtained, 87.7% from invasive diseases. In the pre-PCV10 period 187 isolates were included, the most prevalent serotypes were 14, 3, 19F, 23F and 7F. During the post-PCV10 the most frequent were non-vaccine serotype 19A and 3, follow by 23F, 4 and 14. Considering only CSF isolates, in the first period serotype 3 was the most prevalent, while 19A was in the second one. The AST using the non-meningitis breakpoints, no resistance was evidenced during the study period. Analyzing isolates obtain from CSF (meningitis breakpoints), penicillin resistance remained similar in both periods (39.4%vs40.0%). For ceftriaxone, the reduced susceptibility was similar (18.2%vs20.0%); however, we observed the emergency of resistant isolates in the post PCV10 (0.0%vs8.6%) fact not present in the first period. Susceptibility to vancomycin remained 100% in both periods – data presented in table.

Conclusions: To our knowledge, this is the first report of such resistance level for ceftriaxone in CSF isolates in Brazil. The presence of serotype 19A in the post-PCV10, usually related to increased antimicrobial resistance, might be related to this change. These data suggest the need of association of vancomycin in the empirical therapies – not previously recommended in Brazil.

Table: Antimicrobial susceptibility profile of *S. pneumoniae* isolates from pre- and post-vaccine period

Isolates		**Pre-PCV10**			**Post-PCV10**		
		S (%)	I (%)	R (%)	S (%)	I (%)	R (%)
Invasive and non-invasive diseases (non-meningitis breakpoints)	Penicillin	187 (100)	-	-	325 (97.0)	10 (3.0)	-
	Ceftriaxone	182 (97.3)	5 (2.7)	-	308 (92.0)	27 (8.0)	-
	Vancomycin	187 (100)	-	-	335 (100)	-	-
Cerebrospinal fluid (meningitis breakpoints)	Penicillin	20 (60.6)	-	13 (39.4)	21 (60.0)	-	14 (40.0)
	Ceftriaxone	27 (81.8)	6 (18.2)	-	28 (80.0)	4 (11.4)	3 (8.6)
	Vancomycin	33 (100)	-	-	35 (100)	-	-

S, susceptible; I, intermediate; R, resistant.