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Clinical outcomes in adults with invasive pneumococcal disease in five healthcare institutions of Bogota, Colombia.

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BACKGROUND AND AIMS

Although invasive pneumococcal disease (IPD) in adults is associated with significant morbidity and mortality, data are yet scarce in low- and middle-income countries.

In Colombia, the distribution of pneumococcal serotypes and the development of bacterial resistance to antibiotics commonly used to treat them are monitored by the Surveillance Network for Bacterial Agents at the Microbiology laboratory of the Colombian National Health Institute (Instituto Nacional de Salud, INS) (1). Little is known about the IPD clinical and microbiological characteristics as well as outcomes in adults. Therefore, this information is essential to guide national preventive interventions as pneumococcal immunization program in this population.

We aimed to characterize clinical outcomes of adults aged ≥18 years with IPD in Bogotá (Colombia).

METHODS

A descriptive, observational, and retrospective chart review study was conducted in five tertiary hospitals in Bogotá (Colombia) in adults aged ≥18 years with IPD between 2011-2017. Data on demographics, clinical characteristics, serotypes and antimicrobial susceptibility were collected. The main variables analyzed were clinical presentation, length of stay (LOS), intensive care unit (ICU) admission, case-fatality rate (CFR) by gender, age group, clinical presentation and serotype. Additional analyses stratifying by age groups (<60 and ≥60 years) were performed.

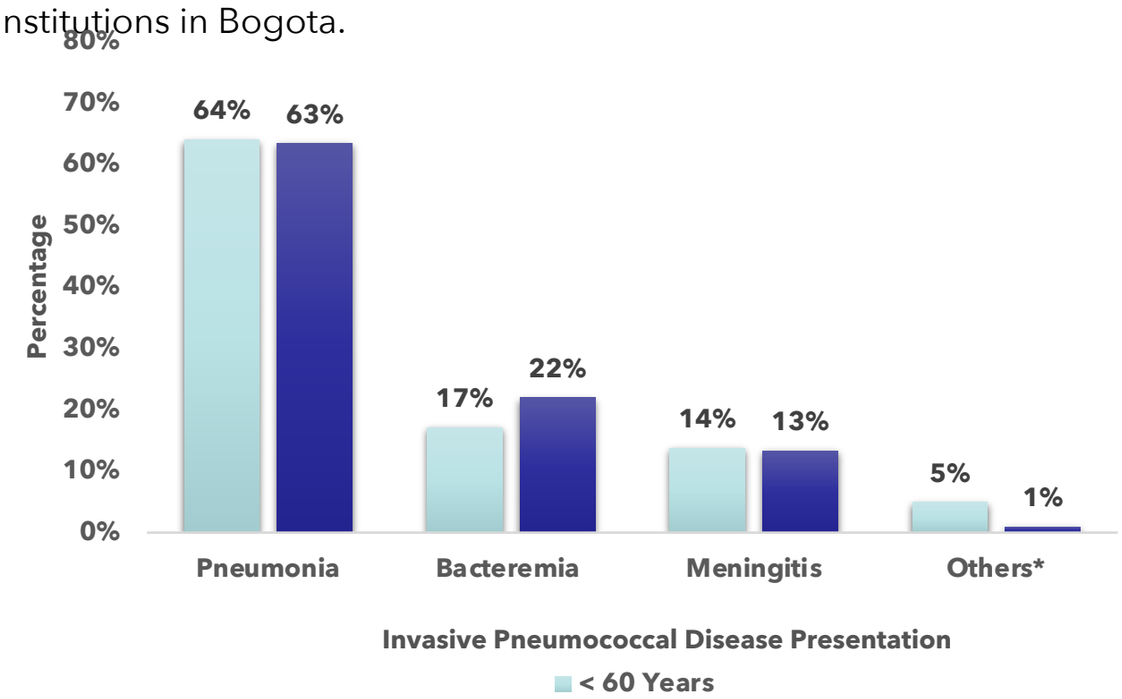
RESULTS

- 169 cases were included, 51.5% (n=87) were male and the median age was 58 years (interquartile range [IQR]:45–70).
- The main clinical presentation was bacteremic pneumonia (63.9%), followed by primary bacteremia (19.5%), meningitis (13.6%) and others (peritonitis, soft tissue infection, osteoarticular infection, and infection in more than one site; 3.0%). The characteristics about the distribution of the diagnoses by age groups (<60 and ≥60 years) can be seen in Figure 1.
- Among the 114 cases (67.5%) which had serotyping data, most frequent serotypes were: 3 (11.4%), 14 (9.6%), 19A (8.8%), 6C (6.1%), and 6A (5.3%).
- The median LOS was 12 days (IQR:4-20); 58.6% (n=99) were admitted to ICU (median 5 days (IQR:2–13.3); 53.3% (n=90) required mechanical ventilation and 50.9% (n=86) inotropic support.
- Regarding the clinical presentation, the proportion of ICU admission was higher in meningitis (78.3%), followed by bacteremia (63.6%) and pneumonia (53.7%).
- The CFR was 41.4% and varied by gender, age group, clinical presentation and serotype (table 1). It was observed that the lethality was higher in adults ≥60 years old compared to <60 years old (54.9% vs. 28.7%).

LIMITATIONS

- This study was conducted retrospectively, introducing a potential information bias. Uncontrolled confounding factors might exist. To minimize these factors, well-trained research team collected data using a structured case report form.
- Since PCV-10 was introduced in 2011 in the childhood national immunization program (NIP) and Colombia does not have adult pneumococcal program (2), these 2011-2017 consolidated data do not allow clinical outcomes trends analysis in adults due to herd immunity after PCV-10 introduction in childhood NIP.

Figure 1. Clinical presentation by age group (<60 and ≥60 years) in patients with invasive pneumococcal disease in five healthcare institutions in Bogota.



* Others include: peritonitis, soft tissue infection, osteoarticular infection and pneumonia + meningitis.

Table 1. Case-fatality rate in adults with invasive pneumococcal disease in five healthcare institutions in Bogota, Colombia.

	Survival	Deaths	Total	CFR
Gender				
Male	44	42	87	48.3
Female	55	27	82	32.9
Age group				
18 – 49	34	16	50	32.0
50 - 59	28	9	37	24.3
60 - 69	16	22	38	57.9
70 - 79	15	10	25	40.0
>80	6	13	19	68.4
Overall	99	70	169	41.4
Clinical presentation				
Pneumonia	68	40	108	37.0
Meningitis	12	11	23	47.8
Bacteremia	15	18	33	54.5
Others	4	1	5	20.0
Overall	99	70	169	41.4
Serotypes				
3	7	6	13	46.2
14	10	1	11	9.1
19A	7	3	10	30.0
6C	4	3	7	42.9
6A	5	1	6	16.7
All serotypes	71	43	114	37.7

CONCLUSIONS

- This study found that IPD was associated with high mortality and ICU admission. The results of this study are important as for the first time, the clinical and microbiological characteristics of IPD in Colombian adults are described.
- The highest CFR were seen in adults aged ≥60 years, in those with bacteremia and meningitis presentations, and serotypes 3 and 6C cases.
- These findings highlight the relevance and the need of continue surveillance of adult invasive pneumococcal disease and implementation of public health interventions to protect this population against *S. pneumoniae* diseases.

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