BURDEN OF PNEUMOCOCCAL INVASIVE DISEASES IN A TERTIARY REFERRAL CENTER FOR PEDIATRICS IN TUNISIA

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BACKGROUND AND AIMS:

Invasive pneumococcal disease (IPD) is a major cause of illness and death among children worldwide. In Tunisia, after the introduction of anti-haemophilus vaccination in the vaccination calendar, pneumococcus has become the first cause of community acquired infections in children.

Aims: To analyse the epidemiological profile, clinical features, bacteriological data and prognosis of PIDs in children admitted in a pediatric department of a University Hospital in Tunisia.

METHOD:

All children ≤ 18 years with IPDs admitted to the tertiary referral center for pediatrics in Sahloul Hospital from 1994 to 2017 were included.

RESULTS:

Sixty-seven children fulfilled the diagnostic criteria for IPD giving a proportion of 2.08 per 1000 hospital admissions. Infants under 2 years of age represented 55.2% (**figure 1**).

CLINICAL FEATURES:

In our study population, IPDs were as belong: (**figure 2**)

- **Pneumococcal pneumonia:** affecting 32 cases (47.8%) i an average age: 3 years old (5 months -10 years old). These patients presented:
 - ✓ Fever: 30 cases (93.7%)
 - ✓ Cough: 21 cases (65.6%)
 - ✓ Dyspnea: 9 cases (28, 1%)
- **Pneumococcal meningitis:** affecting 24 cases (35,8 %) in an average age: 5 years old (2 months – 14 years old)
- **Pneumococcal osteoarthritis:** affecting 4 cases (5,9%) in an age of 3months to 7months old
- **Pneumococcal peritonitis:** 2 cases (age: 6 years / 8 years old)
- **Pneumococcal septicemia:** 4 cases (5,9%)
- **Pneumococcal ethmoiditis:** 1 case (1,5%)

BACTERIOLOGICAL FEATURES:

Most strains was sensible to Penicillin (**figure 3**). Penicillin non-susceptibility occurred in isolates from 7 cases (10.5%), Penicillin resistance in 6 cases (9%) and Cefotaxim resistance in 1 case (1.5%).

Figure 3: Pneumococcal strains distribution according to its Penicillin susceptibility

Table I, II, and III summarise the bacteriological data of our study

Outcome of patients with IPD:

The outcome of patients under antipneumococcal antibiotic was most often favorable. However, in patients with pneumonia complications occurred in 4 patients (12.5%) and death in 3 cases (9.4%) while in patients with meningitis complications were observed in 15 cases (62.5%) and death in 5 (20.8%). No deaths were observed in the other IPDs.

CONCLUSION:

The epidemiological, clinical and bacteriological data found in our work show that IPDs represent a real national health problem with heavy morbidity and mortality and a significant economic cost. Vaccination remains the only way to improve this situation.

Figure 1: Age repartition of patients with IPD

Figure 2: Distribution of patients according to the location of IPD

Table I: Distribution of samples isolating Pneumococcus

	CSF n(%)	Blood culture n(%)	Other samples n(%)	Total n(%)
< 2 years old	12(17,7)	19(28,3)	6(9)	37(55)
2- 5 years old	4(5,6)	2(2,9)	3(4,5)	9(13)
> 5 years old	7(11)	9(13,5)	5(7,5)	21(32)
Total	23(34,3)	30(44,7)	14(21)	67(100)

Table II: Distribution of Pneumococcal Strains according to its Penicillin susceptibility and its site location

	Méningitis n(%)	Pleuropneumonia n(%)	Other infections n(%)	Total n(%)
PSP	19(79,2)	27(84,4)	8(72,7)	54(80,6)
PNSP	2(8,3)	3(49,4)	2(18,2)	7(10,4)
PRP	3(12,5)	2(6,2)	1(9,1)	6(9)
Total	24(100)	32(100)	11(100)	67(100)

Table III: Distribution of Pneumococcal Strains according to its Penicillin susceptibility and to the age of the patient

	<2 years old n(%)	2-5 years old n(%)	>5 years old n(%)	Total n(%)
PSP	27(73)	8(88,9)	19(90,5)	54(80,5)
PNSP	4(10,8)	1(11,1)	2(9,5)	7(10,5)
PRP	6(16,2)	0	0	6(9)
Total	37(100)	9(100)	21(100)	67(100)

CSF: Cerebro-Spinal Fluid; PSP: Penicillin Susceptible Pneumococci; PNSP: Penicillin Non-Susceptible Pneumococci; PRP: Penicillin Resistant Pneumococci