CASES OF YOUNG PATIENTS WITH MENINGOCOCCAL DISEASE CAUSED BY *NEISSERIA MENINGITIDIS* GROUP B IN A PAEDIATRIC INTENSIVE CARE UNIT

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Background

Meningococcal disease, although quite rare, usually presents with fulminant onset and severe clinical course. After the implementation of vaccines against *Neisseria meningitidis A, C, W135* and *Y,* the majority of cases are caused by *Neisseria meningitidis B* (MenB). During the period 2004-2016, the mean annual notification rate of the disease was 0.68 cases per 100.000 population, in Greece. Nonetheless the rate was much higher in the 0-4 years age group (Figure 1 and 2). The vast majority of cases was caused by *Men B* (Figure 3). We present a series of cases hospitalized in the paediatric Intensive Care Unit (PICU) of our hospital.

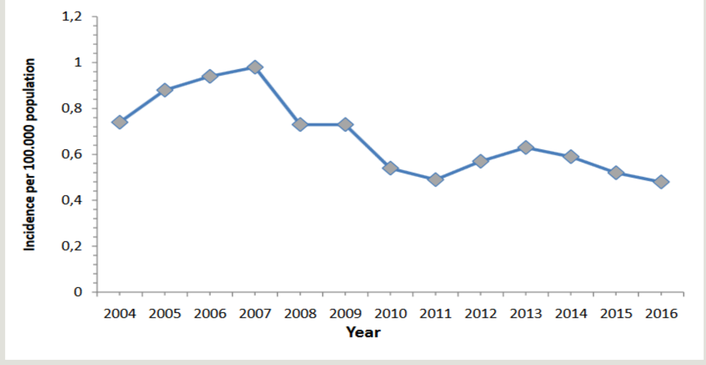


Figure 1. Mean annual notification rate time trend in meningococcal disease, Greece, 2004-2016

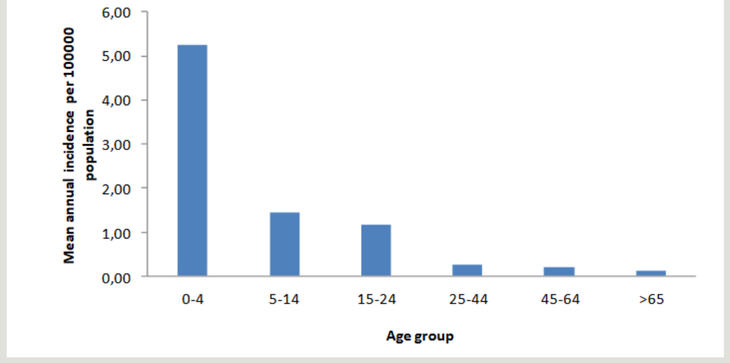


Figure 2. Mean annual notification rate of meningococcal disease (cases/100,000 population),per age group in Greece, 2004-2016

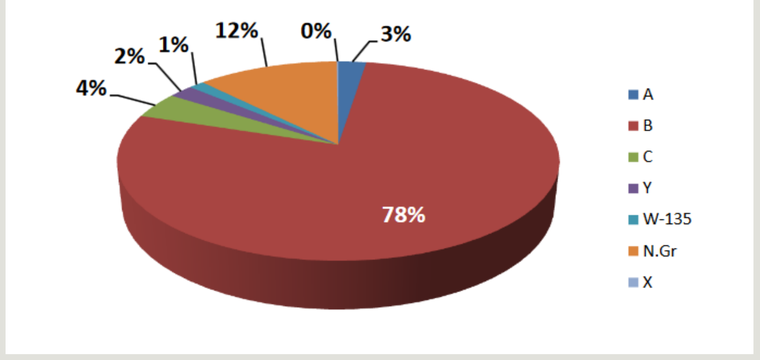


Figure 3. Distribution of meningococcal disease by serogroup in Greece, 2004-2016

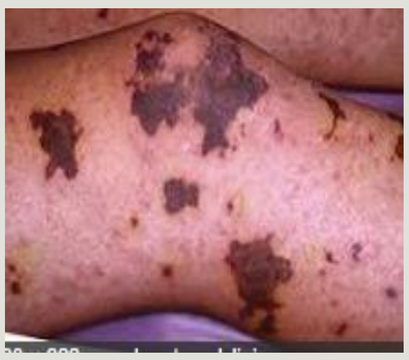
Cases Presentation

The medical records of patients hospitalized with meningococcal disease in the pediatric ICU (PICU) from January 2015 until April 2017 were retrospectively reviewed. Six patients (3 boys) with meningococcal disease were admitted to the PICU during this period. The mean age was 4.6 years (10 months to 13 years). All patients presented to the emergency department of affiliated hospitals with hemorrhagic rash and hemodynamic instability, necessitating transfer to the PICU for respiratory and circulatory support. All of them required intubation and inotropic support.

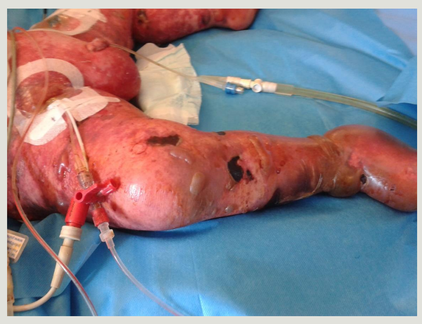
The PCR analysis of cerebrospinal fluid and/or blood revealed *MenB.* Four (66.6%) patients had an excellent response to treatment and were extubated without any problem, while 2 died. The mean duration of PICU hospitalization was 10.7 days for the survivors and 18.5 days for the fatal cases. None of the survivors had any neurologic sequelae. Two of them had skin necrosis that improved with topical care and debridement. One of them was treated with heparin for 3 months because of deep vein thrombosis. None of the patients was vaccinated against *MenB*.

	Age/ sex	LP cells/mm^3	LP glucose/ serum glucose mg/dl	LP protein mg/dl	PCR Men B	Days in PICU	Outcome
Patient 1	10mo ♀	900	37 / 89	205	CSF	10	Cured
Patient 2	16mo ♂	Haemorrhagic sample	Haemorrhagic sample	Haemorrhagic sample	CSF	8	Cured
Patient 3	2y ♂	Not performed Unstable patient	Not performed Unstable patient	Not performed Unstable patient	Blood	28	Deceased
Patient 4	8.5y ♀	Not performed	Not performed	Not performed	Blood	11	Cured
Patient 5	13y ♂	200	22 / 127	34.8	CSF	14	Cured
Patient 6	2y ♀	Not performed Unstable patient	Not performed Unstable patient	Not performed Unstable patient	Blood	11	Deceased

Table 1: Lab results, length of stay and outcome of the patients. LP: lumbar puncture, ♂: male, ♀: female



A 13y old child with MenB meningitis (Pt 5)



A 2y old boy with MenB Septicaemia (Pt 3)

Discussion

Meningococcal septicaemia and meningitis, although rare, is a devastating disease with high morbidity and mortality. In population based studies, including all ages, the overall mortality for meningococcal disease was found to be around 7%. Reported mortality of children who are admitted to intensive care with meningococcal disease varies from less than 2% to 27%. In our cases, 2/6 patients passed away, but our sample was small, so no conclusions can be drawn. Early diagnosis and treatment is paramount to reduce mortality and sequelae. Still, the best way to reduce the disease burden, is preventing it by universal vaccination against *MenB.*

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