Short Communication

The Evolution of the Epidemiological Situation of Invasive Meningococcal Disease in Opole Voivodeship in the Years 2005-2012

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Abstract

Analysis of the epidemiological situation of the Invasive Meningococcal Disease in the Opole voivodship in 2005-2012 in relation to the situation in Poland and other various voivodships.

Methods: In order to achieve the goals of the research the analysis of documents held by the State Sanitary Inspection agencies in Opole voivodship and of infections of Neisseria meningitidis was used.

Results: In Opole voivodship an increase in the incidence of disease from one case in 2005 to 39 cases in 2007 was observed (incidence of 0.1 to 3.75 / 100 000) and a decrease in the incidence 2008-2010 from 6 to 2 cases (incidence of 0.6 to 0.19).

Conclusions: In Poland in the above mentioned period there was an increase of incidence of the Invasive Meningococcal Disease, in addition to cases of occasional outbreaks of epidemic, mainly caused by the meningococcus serogroup C. Epidemiological and microbiological surveillance was strengthened and the National Reference Centre for the Diagnosis of Bacterial Infections of the Central Nervous System 'KOROUN' was set up.

INTRODUCTION

Invasive Meningococcal Disease is caused by gram-negative diplococcus Neisseria meningitidis. The epidemiological situation of the Invasive Meningococcal Disease is not stable and changes in the world in a dynamic way. Endemic occurrence of Neisseria meningitidis strains fluctuates and often is observed in the appearance of strains previously not present in the area. The Invasive Meningococcal Disease remains a major public health challenge. Despite the significant development of diagnostic and therapeutic methods, the existence of effective methods of prevention raises still a big concern among the medical staff, but also among the general public (Figure 1). The Invasive Meningococcal Disease is a rare, but serious disease and without immediate specialist treatment it may end up fatal or cause serious complications [1-9].

Aim of the study

• Analysis of the epidemiological situation of the Invasive Meningococcal Disease in the Opole voivodship in 2005-2012 in relation to the situation in Poland and other various voivodships.
• Analysis of the factors that may affect the spread of meningococcal infections in Opole voivodship in 2005-2012.
• Assessment of the effectiveness of preventive measures taken to curb the spread of meningococcal infections in Opole voivodship in 2005-2012.
• Analysis of clinical Invasive Meningococcal Disease in patients from Opole voivodship in 2005-2012.
• Evaluation of the treatment of the Invasive Meningococcal Disease of the analyzed group of patients from Opole voivodship in 2005-2012.

MATERIAL AND METHODS

Material

The studied group consisted of 74 people residing in Opole voivodship, in which in the period from January 1st, 2005 to December 31st, 2012 were registered in the Opole district epidemiological stations appropriate for the place of residence of patients of the Invasive Meningococcal Disease.

Methods

In order to achieve the goals of the research the analysis of documents held by the State Sanitary Inspection agencies in Opole voivodship and of infections of Neisseria meningitidis was used.

RESULTS

An assessment of the epidemiological situation of Opole voivodship and it was found that in the years 2005-2012 in Opole voivodship 124 suspected cases of the Invasive Meningococcal Disease were reported. After verifying the data 74 cases of the Invasive Meningococcal Disease were eventually confirmed (Figure 2-4). Including 67 cases of microbiologically confirmed and 7 probable cases, microbiologically not confirmed. In 67 cases microbiologically confirmed etiological factors were isolates of Neisseria meningitidis: group C (n=21, including 8 cases caused by isolates belonging to hiperepidemiological clonal complex with the type of sequential ST-11, which gave rise to particular concern), group B (n=26), group Y (n=2) and isolates for which serogroup was “not specified” (n=18). In Opole voivodship an increase in the incidence of disease from case in 2005 to 39 cases in 2007 was observed (incidence of 0.1 to 3.75 / 100 000) and a decrease in the incidence 2008-2010 from 6 to 2 cases (incidence of 0.6 to 0.19) (Figure 5).

In the above mentioned period two outbreaks of the Invasive
Figure 3 The number of cases of invasive Meningococcal Disease in Opole Voivodeship in the years 2005-2012 by etiologic factor and in Neisseria meningitidis bez określenia serogrupy.

Figure 4 The number of cases in the ICHM in individual age groups.

Meningococcal Disease have been recorded in Opole voivodship in the towns of Brzeg and Wotczyn. As part of the investigation epidemiological surveillance of the Invasive Meningococcal Disease 1467 people were included with close contact with patients.

Analyzing the possible factors that contributed to the picture of the epidemiology of the Invasive Meningococcal Disease were found in Opole voivodship it was stated:

- advantage of the number of cases among women (n=41) compared to men; the age of male (n=33) patients was ranged from 4 months to 58 years (median 18), while among women ranged from 1 month to 81 years (median 17).
- the biggest group of patients was with the Invasive Meningococcal Disease in Opole voivodship in 2005-2012 is a group from 0 to 4 years (n=16) and a group of 15-19 years (n=16). Another in terms of frequencies is a group of 20-24 years (n=13), another group from 10-14 years (n=8), 55-59 (n=5), 5-9 years (n=4), 40-44 years (n=3), 35-39 years (n=2), 45-49 years (n=2), 50-54 (n=2). The lowest numerical ages are from 25 - 29 years (n=1), 30-34 (n=1) and ages 75 + (n=1). In the advanced age groups above 60 years old, except for one case of the Invasive Meningococcal Disease - patients at the age of 75 years old, there were no other cases.
- a significant increase in prevalence of the Invasive Meningococcal Disease in the age group of 0-4 years in the rural population, compared with the inhabitants of the cities and inverse ratio in the age group 20-24, where locals incidence was higher. In other age groups, the incidence of rural and urban populations were
microbiological surveillance was strengthened and the National Reference Centre for the Diagnosis of Bacterial Infections of the Central Nervous System ‘KOROUN’ was set up. The way of notification and registration of infections was changed. Definitions of cases of communicable diseases that detailed reporting criteria were introduced, the obligation to send isolates and biological material which may include meningococcal to ‘KOROUN’ and non-cultivated diagnostic techniques were introduced. Surveillance is essential in detecting, understanding and predicting the epidemiology of meningococcal disease [3,5,10-14].

REFERENCES
13. www.koroun.edu.pl
14. www.meningokoki.pl

SUMMARY
The Invasive Meningococcal Disease still remains a serious public health challenge. Despite the significant development of diagnostic and therapeutic methods, the existence of effective methods of prevention and the emergence of cases of the disease still raises a big concern among the medical staff. The Invasive Meningococcal Disease is a serious disease, directly life-threatening, which despite universal access to specialist treatment is fraught with high mortality and numerous complications. In recent years there have been changes of the epidemiological situation in Poland. In Poland in the above mentioned period there was an increase of incidence of the Invasive Meningococcal Disease, in addition to cases of occasional outbreaks of epidemic, mainly caused by the meningococcus serogroup C. Epidemiological and microbiological surveillance was strengthened and the National

statistically similar.
• The most common clinical form of the Invasive Meningococcal Disease was sepsis (n=47), followed by the meningitis (n=20), the least figure of mixed infection sepsis + meningitis (n=7). In 74 cases of the Invasive Meningococcal Disease occurring in Opole voivodship in the above mentioned period, 38 cases resulted in a cure without complications, in 25 cases complications occurred, in 11 cases disease were fatal (in 8 cases of sepsis, in 2 cases of mixed sepsis + meningitis, 1 case for infection of meningitis).

Figure 5 The number of reported cases of chemoprophylaxis in the various districts of the province. Opole in the years 2005-2010 source: WSSE Opole.