

Epidemiology of meningococcal disease in Poland -summary of the routine surveillance data from 1970 - 2004

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Background

Poland has been producing statistics on invasive meningococcal disease based on clinical reports since 1946. However up to 2003 only meningococcal meningitis was reportable.

Data from 1946 – 1969 (before the 8th ICD revision was introduced) included up to 50% of wrongly classified cases and are considered unreliable. Only aggregate data are available for the time period 1970 – 1993.

Although both polysaccharide and conjugated vaccines are licensed in Poland they are not used routinely.

Material and Methods

1. Surveillance system:

- Compulsory system run by a network of public health departments (sanitary-epidemiological stations, SES), who conduct epidemiological investigation and implement control measures
- Covers meningococcal meningitis/encephalitis and meningococcal septicaemia reported by physicians to local SES

Lab data: hospital laboratory results

- Some hospitals send samples to the National Reference Laboratory (www.nizp.edu.pl)
- In 1994 – 2004 74% of cases were confirmed by culture

Data flow:

- Aggregated data forwarded biweekly to national level and published (www.pzh.gov.pl/epimeld)
- Completed data forms forwarded quarterly to regional SES and to the National Institute of Hygiene
- Clinical records up to now not reconciled with the reference laboratory records on a national scale

The present study is based on aggregate data for 1970–2004 and case-based data for 1994–2004

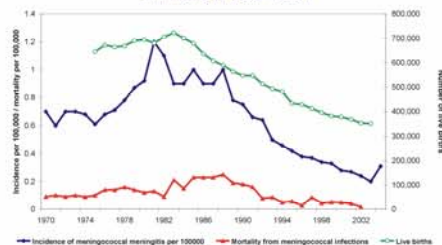
2. Statistical analysis:

Incidence was analysed by Poisson model comprising age group, gender, urban/rural residence and year of diagnosis

Results

Incidence of meningococcal meningitis during 1970–2004 ranged between 0.2 and 1.2 per 100,000 (Fig. 1). Decline observed in recent years is consistent with the decline of birth rate and the mortality from meningococcal infections (data from the Central Statistical Office).

Fig. 1. Incidence of meningococcal meningitis compared to mortality from meningococcal infections and the number of life births in Poland in 1970 - 2004

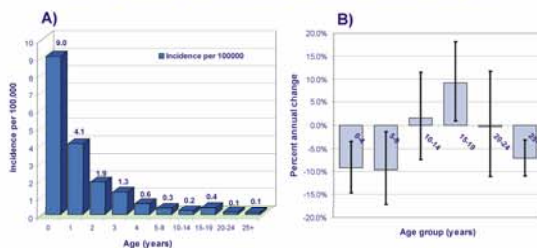


In 1994–2004, 1389 cases were registered, 817 males (mean inc. 0.39 per 100,000) and 572 females (mean inc. 0.26). Adjusted RR for females, compared to males, was 0.71 (95% CI 0.64 – 0.79).

In 1994 incidence was lower in urban areas (RR= 0.71 95% CI 0.60 – 0.86), but it decreased to a greater level in rural setting to non significant urban/rural difference in 2004.

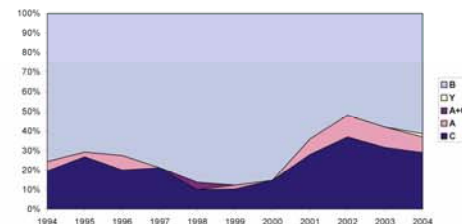
Age specific incidence trends are shown on Figure 2.

Fig. 2. Mean age specific incidence of meningococcal meningitis in Poland in 1994 – 2004 (A) and adjusted percent annual change of incidence in 1994 – 2004 with 95% confidence intervals (Poisson model) (B)



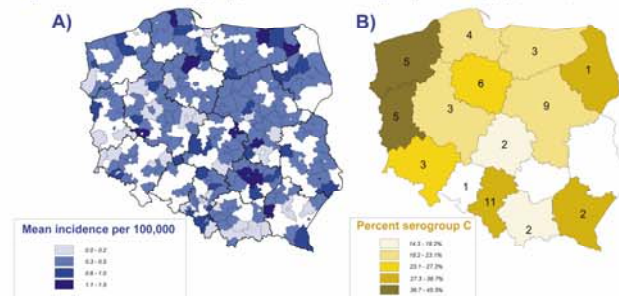
Serogroups were identified only in 34% of cases and their distribution is shown on Figure 3.

Fig. 3. Percentage of serogroups in cases, for whom serogroup was confirmed, Poland 1994 - 2004



Geographical data reveal areas with consistently higher incidence over the investigated years. Figure 4 compares the mean incidence with percentage of serogroups C in Poland in 1999–2004. Group C causes the highest proportion of vaccine-preventable meningococcal disease in Poland.

Fig. 4. Incidence of meningococcal meningitis by administrative unit (A) and percent of serogroup C among cases with known serogroup (with number of serogroup C cases) (B), Poland, 1999–2004



Conclusions

1. Incidence of meningococcal disease has been declining in Poland in 1994–2004 as evidenced both by the surveillance of meningococcal meningitis and the mortality data.
2. The decreased overall incidence of meningococcal meningitis reflects mainly low birth rate and a decrease in age specific incidence in 0–4 years olds.
3. The incidence in 15 – 19 years age group increases, the reason for which remains unclear and merits further studies.
4. Percent of disease caused by group C seems to be increasing although for 66% of cases the serogroup was not confirmed.
5. Greater case ascertainment and serogroup/serotype identification is necessary.