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SCARLET FEVER IN POLAND IN 2011

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ABSTRACT

OBJECTIVE. Assessment of the epidemiological situation of scarlet fever in Poland in 2011

MATERIALS AND METHODS. The evaluation was performed by analysing the data published in the bulletin, “Infectious diseases and poisonings in Poland in 2011” (Warsaw 2012, NIPH-NIH, CSI) and also in bulletins from previous years.

RESULTS. Since 2004 in Poland has been observed epidemic increase in the number of scarlet fever cases. However, the growth rate is significantly slower and incidence is considerably lower than in previous epidemic periods. In 2011, in the country a total of 18 267 cases were registered and incidence was 47.4 per 100,000 population (in provinces: from 23.4 in Łódzkie to 68.0 in Śląskie). The highest incidence was notified in 5-year-old and 6-year-old children (782.4), whereas the incidence of children and young people up to 15 years accounted for 96.9% of all cases. The incidence of men 53.7 by almost 30% was higher than the incidence of women (41.6). The incidence was higher in urban areas than in rural areas and was 53.3 (in rural area 38.3). 1.1% of patients were hospitalized. No deaths were reported.

SUMMARY. An impact on the epidemiological situation of scarlet fever in Poland in the last two decades have i.a. demographic changes - decline in the population of children, i.e. in group which is particularly vulnerable to infection.

In order to raising the reliability of surveillance data, it is recommended a prominent heightening of the percentage of cases which clinical diagnosis would be confirmed by the result of bacteriological examination.

Key words: scarlet fever, infectious diseases, epidemiology, Poland, 2011

OBJECTIVE

The aim of this study was to assess the epidemiological situation of scarlet fever in Poland in 2011, in comparison with the previous years.

MATERIALS AND METHODS

The evaluation was performed by analysing the data published in the bulletin, “Infectious diseases and poisonings in Poland in 2011” (Warsaw 2012, NIPH-NIH, CSI) and also in bulletins from previous years. Regardless, in the analysis were used some of previously unpublished data of the scarlet fever cases registered in 2011 and sent to the Department of Epidemiology NIPH- NIH by Voivodeship Sanitary- Epidemiological Stations under the programme of statistical surveys of official statistics for 2011.

All data used in the analysis, both current and historical, were related to the scarlet fever cases reported by the physicians to the State Sanitary Inspectorate in connection with obligatory reporting cases of this disease, introduced in 1963, by legal act “Ustawa o zwalczaniu chorób zakaźnych” (Dz. U. Nr 50, poz. 279 z późn. zm.) and maintained in later years in the next legal acts, which define rules of infectious diseases surveillance system (Dz. U. 2001 nr 126 poz. 1384 z późn. zm.; Dz. U. 2008 nr 234 poz. 1570 z późn. zm.).

In all the above-mentioned period, i.e. since 1963, registered and shown in the reports were all illnesses reported by physicians as a scarlet fever, which allows to compare long-term data.

Comparability of the data is not disrupted by the introduction in epidemiological surveillance in Poland, in 2005 scarlet fever case definition, because this definition provides also for (except of confirmed cases and

probable cases) possible cases – defined as an illness recognized by physicians as a scarlet fever.

RESULTS AND DISCUSSION

The epidemic cycle of scarlet fever in Poland after the last outbreak of this disease (26 466 cases in total, in 1995, incidence 68.6 per 100,000 population) is significantly prolonged. Since the beginning in 1996, for eight years a marked reduction has been observed in the incidence, then, after 2003, for the next eight years there has been a more or less marked increase in incidence level. (Fig. 1) In 2011, the incidence of scarlet

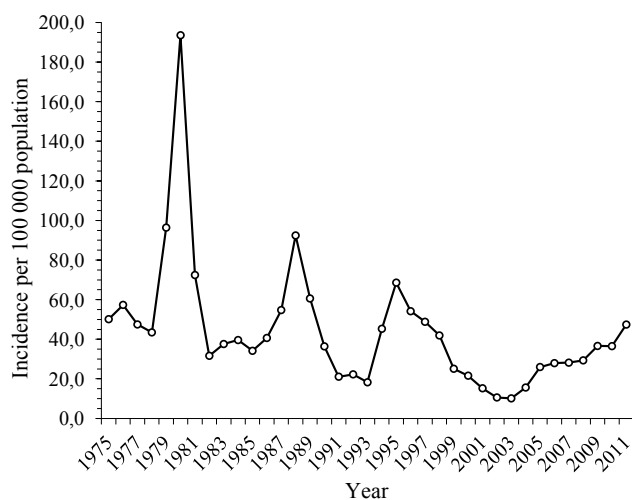


Fig. 1. Scarlet fever in Poland 1975-2011. Incidence per 100,000 population

fever in Poland increased by almost 30% in comparison to the previous year and nearly by 70% in comparison to the median of the years 2005-2009 and the seasonal incidence curve for 2011 is not announced the collapse of the upward trend for the next year. (Fig. 2)

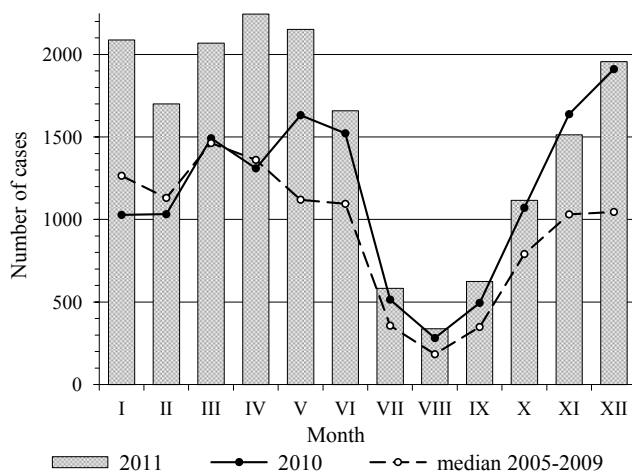


Fig. 2. Scarlet fever in Poland 2005-2011. Number of reported cases by month

In 2011, in the country a total of 18 267 cases were registered and incidence was 47.4 per 100,000 population. The most cases were registered in April (2 244 , i.e. 12.4% of the total number of cases registered in the whole year) and in May (2 152 , 11.9%), and the least - as usual - in August (338 , 1.9%) (Fig. 2)

In particular provinces the incidence of scarlet fever in 2011 compared to 2010 increased in thirteen (in the range from 8% to 92%), in two remained at a similar level (differences within $\pm 5\%$), and in one province visibly decreased (by 22%).

The largest (percentage) increase in the incidence was reported in the province dolnośląskie - from 24.1 to 46.3 per 100,000, i.e. by 92%. The decrease was recorded in the province świętokrzyskie (from 37.1 to 29.0) (Tab. I)

Territorial differences in the incidence of scarlet fever - measured by the ratio of the highest incidence in a scale of provinces to the ratio of the lowest incidence - was small in 2011 (as the ratio of 2.9:1), one of the smallest in the country that has ever been recorded after the change of administrative division in 1999. The highest incidence was recorded in the province śląskie, where the incidence rate was 68.0 per 100,000 popula-

Table I. Scarlet fever in Poland 2005-2011. Number of cases and incidence per 100,000 population by province

Province	Median 2005-2009		2010		2011	
	Number of cases	Incidence	Number of cases	Incidence	Number of cases	Incidence
POLAND	10 740	28.2	13 940	36.5	18 267	47.4
1. Dolnośląskie	905	31.3	692	24.1	1 350	46.3
2. Kujawsko-pomorskie	695	33.6	920	44.5	1 156	55.1
3. Lubelskie	308	14.2	541	25.1	573	26.3
4. Lubuskie	428	42.4	379	37.5	587	57.4
5. Łódzkie	426	16.5	460	18.1	594	23.4
6. Małopolskie	836	25.5	1 315	39.8	1 563	46.8
7. Mazowieckie	1 745	33.7	2 485	47.5	3 153	59.8
8. Opolskie	404	38.7	417	40.5	526	51.8
9. Podkarpackie	309	14.7	457	21.7	581	27.3
10. Podlaskie	244	20.5	222	18.7	414	34.4
11. Pomorskie	715	32.5	935	41.8	1 181	51.8
12. Śląskie	2 033	43.7	2 149	46.3	3 148	68.0
13. Świętokrzyskie	254	19.8	471	37.1	371	29.0
14. Warmińsko-mazurskie	432	30.3	521	36.5	505	34.8
15. Wielkopolskie	1 151	33.9	1 337	39.2	1 864	54.0
16. Zachodniopomorskie	285	16.8	639	37.7	701	40.7

Source: Infectious diseases and poisonings in Poland. NIPH-NIH, CSI. Warsaw. Annals 2005-2011

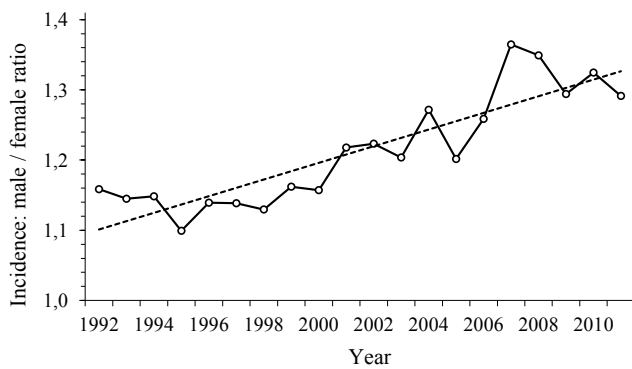


Fig. 3. Scarlet fever in Poland 1992-2011. Incidence per 100,000 population: male/female ratio

tion and exceeded the nationwide incidence by 43%. The lowest incidence, as in 2010, was registered in the province łódzkie (23.4, 51% lower than the incidence in the country). Significantly lower incidence than nationwide also was found in the province lubelskie (26.3, -44%) and podkarpackie (27.3, -42%). In the case of province podkarpackie so low incidence was also the highest, that has ever been recorded in the region after the administrative reform of the country in 1999. (Tab. I)

According to the long-term trend, the incidence of scarlet fever in urban areas in total (53.3 per 100,000) and regardless of the size of the city, was significantly higher than in rural areas (38.3). (Tab. II) In particular provinces scarlet fever incidence rates in urban areas ranged from 72.4 per 100,000 in śląskie and 71.3 in opolskie to 20.2 in łódzkie and 29.5 in lubelskie, while in rural areas from 54.8 in wielkopolskie and 51.1 in mazowieckie to 20.8 in podkarpackie and 21.6 in podlaskie. Higher incidence in urban areas (in total) than in rural areas was recorded in the thirteen provinces, whereas in the province opolskie incidence was more than two times higher (respectively 71.3 and 30.4). Only in the province łódzkie and dolnośląskie significantly higher incidence rates was reported in the rural areas (respectively by 43% and 12%).

Significantly higher incidence of scarlet fever in urban areas than in rural areas in 2011 was noted in

almost all age groups. The biggest differences, more than two times, as in the previous year, were among three-year-old children (incidence in urban areas 746.2 per 100,000 children in this age, in the rural areas 336.7) and among four-year-old children (respectively 990.8, 480.0). (Tab. III)

The incidence of men was in 2011 almost 30% higher than the incidence of women (respectively 53.7 per 100,000 and 41.6). The excess of male cases has been noted in Poland every year since 1981, whereas the difference has a tendency to extent. (Fig. 3) The higher incidence of males in 2011 was mainly among children and adolescents, especially in the age group 15-19 years (17.1 and 10.4).

Distribution of cases according to the age of the patients was in 2011, comparable to those observed in Poland in previous years (Tab. III) and the highest incidence, as in the previous year, was reported among five-year-old children (782.4 per 100,000 children in this age group) and four-year-old children (773.0). Because some modal shift towards youngest age groups has been seen before in 2008-2009, it cannot be excluded that now we observe a permanent change in the epidemiological situation and return to the age distribution of patients seen in the 80s of 20th century. The highest incidence of five-year-old children recorded in ten provinces and among four-year-old children - in six. In the area of the particular provinces incidence rates among five-year-old children ranged from 374.2 in the province łódzkie to 1334.4 in śląskie; among four-year-old children - from 311.0 in podkarpackie to 1292.9 in śląskie.

In 2011 in Poland because of scarlet fever were hospitalized 202 persons - 1.1% of all persons who become ill. Deaths due to scarlet fever - according to data from the Demographic Surveys and Labour Market Department-CSO - not registered.

Since 2005, i.e. from the introduction of scarlet fever case definition in the epidemiological surveillance in Poland, has not been indicated an increase in the percentage of cases in which the clinical diagnosis

Table II. Scarlet fever in Poland 2005-2011. Number of cases and incidence per 100,000 population by location (urban/rural)

Location	Median 2005-2009		2010		2011	
	Number of cases	Incidence	Number of cases	Incidence	Number of cases	Incidence
Urban areas	7 324	31.3	9 622	41.3	12 481	53.3
Towns < 20 thous.	1 579	32.1	1 627	32.9	2 181	43.6
Towns 20-49 thous.	1 189	28.4	1 646	39.3	2 119	49.9
Towns 50-99 thous.	1 044	32.5	1 368	42.8	1 714	52.7
Towns ≥ 100 thous.	3 531	32.0	4 981	45.5	6 467	59.3
Rural areas	3 429	23.2	4 318	29.0	5 786	38.3
Total	10 740	28.2	13 940	36.5	18 267	47.4

Source: Infectious diseases and poisonings in Poland. NIPH-NIH. CSI. Warsaw. Annals 2005-2011

Table III. Scarlet fever in Poland 2011. Number of cases, incidence per 100,000 population, and percentage of cases by age, gender, and location (urban/rural)

Age, years	Gender						Location						Total		
	Male			Female			Urban			Rural					
	Number of cases	Incidence	%	Number of cases	Incidence	%	Number of cases	Incidence	%	Number of cases	Incidence	%	Number of cases	Incidence	%
0 - 4	4 083	385.1	40.8	3 262	324.2	39.5	5 330	445.7	42.7	2 015	231.5	34.8	7 345	355.4	40.2
0	64	31.3	0.6	55	28.5	0.7	74	32.0	0.6	45	27.0	0.8	119	29.9	0.7
1	362	166.6	3.6	255	123.7	3.1	419	170.0	3.4	198	111.8	3.4	617	145.7	3.4
2	629	283.8	6.3	535	253.4	6.5	795	316.8	6.4	369	203.0	6.4	1 164	269.0	6.4
3	1 331	620.9	13.3	1 066	522.6	12.9	1 801	746.2	14.4	596	336.7	10.3	2 397	573.0	13.1
4	1 697	839.0	17.0	1 351	703.5	16.4	2 241	990.8	18.0	807	480.0	13.9	3 048	773.0	16.7
5 - 9	4 810	517.6	48.1	4 119	467.0	49.9	5 977	594.0	47.9	2 952	366.7	51.0	8 929	493.0	48.9
5	1 567	810.3	15.7	1 383	752.9	16.7	2 097	976.5	16.8	853	525.5	14.7	2 950	782.4	16.1
6	1 408	753.8	14.1	1 072	604.9	13.0	1 683	820.6	13.5	797	501.5	13.8	2 480	681.3	13.6
7	917	503.3	9.2	798	461.8	9.7	1 076	545.4	8.6	639	405.1	11.0	1 715	483.1	9.4
8	546	301.0	5.5	519	301.3	6.3	690	356.9	5.5	375	233.9	6.5	1 065	301.1	5.8
9	372	200.6	3.7	347	197.1	4.2	431	220.2	3.5	288	173.7	5.0	719	198.9	3.9
10 - 14	802	79.9	8.0	621	65.2	7.5	839	80.6	6.7	584	63.8	10.1	1 423	72.7	7.8
15 - 19	207	17.1	2.1	120	10.4	1.5	171	13.3	1.4	156	14.3	2.7	327	13.8	1.8
20 - 29	55	1.8	0.5	63	2.1	0.8	77	2.1	0.6	41	1.7	0.7	118	1.9	0.6
30 - 39	31	1.0	0.3	47	1.6	0.6	55	1.5	0.4	23	1.0	0.4	78	1.3	0.4
40 +	20	0.2	0.2	27	0.3	0.3	32	0.3	0.3	15	0.2	0.3	47	0.3	0.3
Total	10 008	53.7	100.0	8 259	41.6	100.0	12 481	53.3	100.0	5 786	38.3	100.0	18 267	47.4	100.0

Source: Infectious diseases and poisonings in Poland. NIPH-NIH, CIS. Warsaw, 2012

would be laboratory confirmed. In 2011 as laboratory confirmed cases the sanitary-epidemiological stations registered only 0.18% of all scarlet fever cases (33 cases) and as possible, i.e. recognized only on the basis of clinical symptoms, 99.80% of the cases. Remaining 0.02 of cases (4 cases) were registered as probable, i.e. epidemiologically linked with laboratory confirmed cases. Such low percentage of laboratory confirmation is not just a problem of epidemiological surveillance system of scarlet fever, is a broader problem of the Polish supervision mechanisms to ensure funding for laboratory diagnostic tests for the public health.

SUMMARY AND RESULTS

The observed in Poland extending epidemic cycle of scarlet fever, slowdown of decline and growth the epidemic curve and a decrease in the average annual incidence, are caused by i.a. demographic changes tak-

ing place in Poland in recent decades – population aging and decline in the population of children, i.e. in group which is particularly vulnerable to infection. Whereas is lower opportunity of disease transmission and outbreaks have more local character.

In order to raising the reliability of surveillance data from epidemiological surveillance of scarlet fever, it is recommended a prominent heightening of the percentage of cases which clinical diagnosis would be confirmed by the result of bacteriological examination.

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