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RUBELLA IN POLAND IN 2011

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ABSTRACT

INTRODUCTION. Since 2004 rubella is covered by the Program for the Elimination of Rubella of the World Health Organization (WHO). The aim of the Program is to interrupt transmission of rubella virus in the environment and prevention of congenital rubella cases in children. In Poland, the vaccination against rubella to 2003 were limited to women, which in turn resulted in an increase in the incidence of rubella among men, and hence a possibility of infection in susceptible pregnant women.
PURPOSE OF THE STUDY. To assess the epidemiological situation of rubella in Poland in 2011, taking into account the vaccination coverage against rubella in the general population and in selected birth cohorts.
MATERIAL AND METHODS. Evaluation of rubella epidemiological situation in Poland was based on data from the newsletters: "Infectious diseases and poisoning in Poland in 2011" and, "Vaccinations in Poland in 2011" (MP. Czarkowski, Warsaw 2012, NIPH-NIH , GIS). Classification of rubella cases was based on the definition of infectious diseases prepared by ECDC.
RESULTS. In 2011, there was a slight increase in the incidence of rubella, compared to 2010 (from 11.0/ 100,000 to 11.1 / 100,000). Total of 4 290 cases were registered. The highest incidence, regardless of gender and the environment, has been among children 5 years old (94.1 /100,000.) and 6-year-old (93.4 / 100,000). As in 2010, the incidence of rubella in girls and women was lower than the incidence in boys and men (9.6/100,000 versus 12.8 / 100,000.). In 2011 there were no recorded cases of congenital rubella.
CONCLUSIONS. Still small proportion of reported rubella cases are laboratory confirmed. In 2011 it amounted to 0.2% of cases.. This situation requires prompt improvement.

Keywords: *rubella, epidemiology, Poland, 2011*

INTRODUCTION

Since 2004, rubella is covered by the Rubella Elimination Program coordinated by the World Health Organization (WHO). The aim of the efforts made by the participating countries of the European Region, targeted to interruption of transmission of rubella virus in the environment, is to prevent cases of congenital rubella in children. Elimination of rubella enables maintaining immunization coverage of the general population over 95% by administering at least one dose of a vaccine against rubella. In Poland, the vaccination against rubella is covered by basic immunization program since 1989, but until 2003 only women were vaccinated, and since 2006 all children at the age of the age of 13-14 months (primary vaccination) and 10 years (booster dose).

PURPOSE OF THE STUDY

Evaluation of rubella epidemiological situation in Poland in 2011, and rubella vaccination coverage of the general population.

MATERIALS AND METHODS

Assessment of rubella epidemiological situation in Poland in 2011 was based on the analysis of data from the newsletter, "Infectious diseases and poisoning in Poland in 2011, while assessment of the population immunization status was based on data from the newsletter "Vaccinations in Poland in 2011" (Czarkowski MP et al. Warsaw 2012, NIPH - National Institute of Hygiene, GIS).

Classification of rubella cases as possible, probable and confirmed was made on the basis of the definitions developed by European Center for Disease Control and Prevention (ECDC) for the epidemiological surveillance.

RESULTS

Rubella epidemiological situation in Poland in 2011. In 2011, the total number of reported cases of rubella was 4 290, which was an increase of 93 cases (2.2%) compared to 2010. The incidence of rubella was 11.1/100,000. It was more than three times lower than the median incidence in 2005-2009 (34.5 / 100,000). In 2011 has not been registered any case of congenital rubella syndrome.

Seasonality of rubella in the year 2011 was similar to the seasonality observed in 2010 and the previous years (Fig.1). As in previous years, the highest incidence of rubella occurred from March to May. The highest number of cases was reported in April, 698 cases, 16.3% of all, the lowest in September, 145 cases (3.1%).

The increase in measles incidence was reported in 7 provinces (Table I). The largest, more than 3-fold increase occurred in Podkarpackie (610 cases - incidence 28.7 /100,000). Decrease of the incidence of rubella was reported in 9 provinces. Almost 5-fold decrease, compared to 2010, was in Opolskie (from

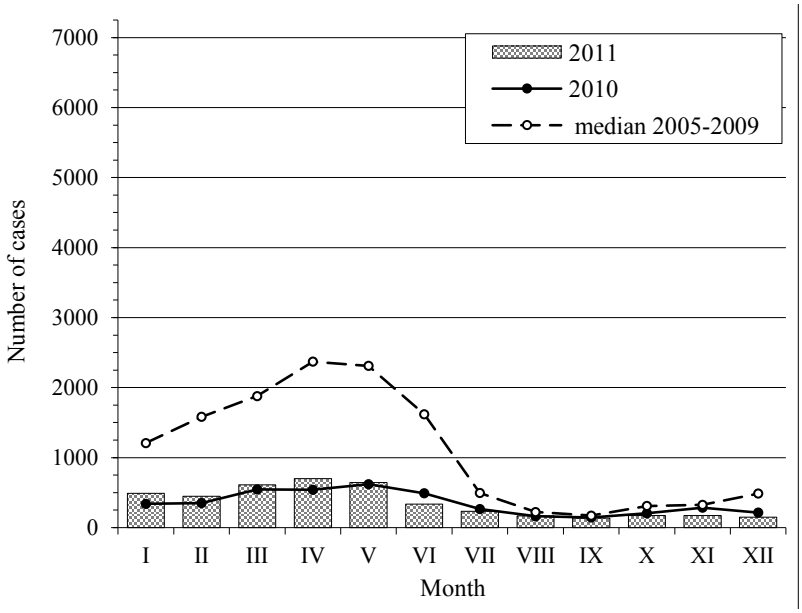

Fig.1. Rubella in Poland 2005-2011. Number of reported cases by month

Table I. Rubella in Poland 2005 - 2011. Number of cases and incidence per 100,000 population by provinces

Province		Median 2005-2009		2010		2011	
		number	incidence per 100,000	number	incidence per 100,000	number	incidence per 100,000
	POLAND	13 146	34.5	4 197	11.0	4 290	11.1
1.	Dolnoslaskie	452	15.7	615	21.4	552	18.9
2.	Kujawsko-pomorskie	385	18.6	208	10.1	257	12.2
3.	Lubelskie	225	10.3	278	12.9	232	10.7
4.	Lubuskie	197	19.5	201	19.9	254	24.8
5.	Łodzkie	447	17.3	152	6.0	243	9.6
6.	Malopolskie	645	19.7	307	9.3	181	5.4
7.	Mazowieckie	1 365	26.5	297	5.7	323	6.1
8.	Opolskie	231	22.1	428	41.6	89	8.8
9.	Podkarpackie	461	22.0	201	9.6	610	28.7
10.	Podlaskie	464	38.8	91	7.7	91	7.6
11.	Pomorskie	872	39.5	184	8.2	139	6.1
12.	Slaskie	1 049	22.4	444	9.6	322	7.0
13.	Swietokrzyskie	730	57.3	107	8.4	99	7.7
14.	Warminsko-mazurskie	282	19.8	149	10.4	63	4.3
15.	Wielkopolskie	1 227	36.1	357	10.5	441	12.8
16.	Zachodniopomorskie	296	17.5	178	10.5	394	22.9

Table II. Rubella in Poland 2005-2011. Number of cases and incidence per 100,000 population by year

Gender	Location	Median 2005-2009		2010		2011	
		number of cases	incidence per 100,000	number of cases	incidence per 100,000	number of cases	incidence per 100,000
Female	town	2 148	17.4	982	8.0	1 067	8.7
	town of < 20 000 population	609	24.0	317	12.3	297	11.5
	town of 20 - 49 000 population	354	16.1	206	9.4	345	15.5
	town of 50-99 000 population	426	25.0	106	6.3	111	6.5
	city ≥ 100,000 population	785	13.4	353	6.1	314	5.4
	countryside	1 727	23.2	798	10.7	844	11.1
	total	3 725	18.9	1 780	9,0	1 911	9.6
Male	town	4 670	42.3	1 304	11.8	1 263	11.4
	town of < 20 000 population	1 308	55.4	449	18.9	348	14.4
	town of 20 - 49 000 population	940	47.1	319	16,0	371	18.3
	town of 50-99 000 population	966	61.6	165	10.8	216	13.8
	city ≥ 100,000 population	1 364	26.5	371	7.2	328	6.4
	countryside	4 884	66.3	113	15.0	1 116	14.8
	total	9 554	51.9	2 417	13.1	2 379	12.8
Total	town	6 535	28.0	2 286	9.8	2 330	10.0
	town of < 20 000 population	1 819	37.0	766	15.5	645	12.9
	town of 20 - 49 000 population	1 294	30.9	525	12.5	716	16.9
	town of 50-99 000 population	1 478	46.0	271	8.5	327	10.0
	city ≥ 100,000 population	1 944	17.7	724	6.6	642	5.9
	countryside	6 611	44.6	1 911	12.8	1 960	13.0
	total	13 146	34.5	4 197	11.0	4 290	11.1

41.6 to 8.8/100,000). In the other provinces decreases in incidence were smaller.

As in 2010, the crude incidence of rubella among girls and women was lower than the incidence in boys and men (9.6 versus 12.8 /100,000.) (Table III). But in the age group 0-1, there was higher incidence among girls than boys (70.5 versus 75.0 / 100,000). An increased number of cases among males was observed in age groups from 2 to 24 years . In other age groups higher incidence among women was reported. The period that has elapsed since the introduction of obligatory vaccination of all children against rubella is still too short to eliminate the difference between incidence in men and women.

The incidence of rubella in rural areas (13.0/100,000) was higher than the incidence in the cities (10.0 /100,000). (Table II). In cities with a population in the range of 20-49 thousand incidence of rubella was 16.9/100,000, while in the larger cities, with population more than 100 thousand it was 5.9 / 100,000

In 2011, 83.0% of cases involved children and young people under the age of 15, cases among children 0-4 years old accounted for 35.0%, at the age of 5-9 years - 35.9% (Table III). The highest incidence, regardless of gender and the environment, has been among children 5 years old (94.1/ 100) and 6-year-old (93.4 /100,000). The share of cases in these age groups in the total number of registered cases was 16.2%. This represents a shift in comparison with 2010 and 2009, when the highest incidence was observed among children 7 and 8 years old.

In 2011, among children aged 0 - 4 years there was a higher incidence in rural areas (73.7 /100,000), than in urban areas (72.0 /100,000). Among children aged 5-9 years in rural areas incidence was 90,4/100000, but in urban 80.9 /100,000. However, the incidence among children aged 1 year (89.7/100,000) was higher than in rural areas (74.0/100,000) (Table III).

Laboratory diagnosis of rubella. The diagnosis of rubella should be based on laboratory test result. Laboratory diagnosis for each suspected rubella case reported is of particular importance because similar symptoms may be observed in other viral diseases. As part of the statutory duty of the epidemiological surveillance of rubella in Poland (Act of 5 December 2008 on the Prevention and Control of Infections and Infectious Diseases in Humans, Dz.U.08.234.1570 as amended.) Laboratory confirmation has to be performed in sanitary-epidemiological stations. According to the Measles and Rubella Elimination Program in the WHO European Region, each confirmed case of measles or rubella should also be tested in the National Reference Laboratories for Measles and Rubella, accredited by

Table III. Rubella in Poland 2011. Number of cases, incidence per 100,000 population, and percentage of cases by age, gender and location

Age (years)	Gender						Location						Total		
	male			famele			urban			rural					
	number of cases	incidence per 100,000	%	number of cases	incidence per 100,000	%	number of cases	incidence per 100,000	%	number of cases	incidence per 100,000	%	number of cases	incidence per 100,000	%
0 - 4	748	70.5	31.4	755	75.0	39.5	861	72.0	37.0	642	73.7	32.8	1 503	72.7	35.0
0	127	62.0	5.3	185	95.9	9.7	172	74.4	7.4	140	84.0	7.1	312	78.5	7.3
1	177	81.5	7.4	175	84.9	9.2	221	89.7	9.5	131	74.0	6.7	352	83.1	8.2
2	130	58.6	5.5	121	57.3	6.3	133	53.0	5.7	118	64.9	6.0	251	58.0	5.9
3	133	62.0	5.6	134	65.7	7.0	159	65.9	6.8	108	61.0	5.5	267	63.8	6.2
4	181	89.5	7.6	140	72.9	7.3	176	77.8	7.6	145	86.2	7.4	321	81.4	7.5
5 - 9	812	87.4	34.1	730	82.9	38.2	814	80.9	34.9	728	90.4	37.1	1 542	85.1	35.9
5	184	95.1	7.7	171	93.1	8.9	202	94.1	8.7	153	94.3	7.8	355	94.1	8.3
6	175	93.7	7.4	165	93.1	8.6	180	87.8	7.7	160	100.7	8.2	340	93.4	7.9
7	171	93.8	7.2	144	83.3	7.5	165	83.6	7.1	150	95.1	7.7	315	88.7	7.3
8	164	90.4	6.9	135	78.4	7.1	153	79.1	6.6	146	91.1	7.4	299	84.5	7.0
9	118	63.6	5.0	115	65.3	6.0	114	58.2	4.9	119	71.8	6.1	233	64.4	5.4
10 - 14	287	28.6	12.1	230	24.1	12.0	252	24.2	10.8	265	29.0	13.5	517	26.4	12.1
15 - 19	411	34.0	17.3	55	4.7	2.9	237	18.5	10.2	229	21.0	11.7	466	19.7	10.9
20 - 24	63	4.4	2.6	24	1.7	1.3	53	3.2	2.3	34	2.9	1.7	87	3.1	2.0
25 - 29	28	1.7	1.2	31	1.9	1.6	41	2.0	1.8	18	1.5	0.9	59	1.8	1.4
30 - 34	7	0.4	0.3	36	2.3	1.9	28	1.4	1.2	15	1.3	0.8	43	1.4	1.0
35 - 39	12	0.8	0.5	24	1.7	1.3	23	1.3	1.0	13	1.2	0.7	36	1.3	0.8
40 - 44	4	0.3	0.2	12	1.0	0.6	10	0.7	0.4	6	0.6	0.3	16	0.7	0.4
45 - 49	1	0.1	0.0	8	0.7	0.4	5	0.3	0.2	4	0.4	0.2	9	0.4	0.2
50 - 54	2	0.1	0.1	2	0.1	0.1	1	0.1	0.0	3	0.3	0.2	4	0.1	0.1
55 - 59	2	0.1	0.1	3	0.2	0.2	3	0.2	0.1	2	0.2	0.1	5	0.2	0.1
60-64	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
65-74	2	0.2	0.1	1	0.1	0.1	2	0.1	0.1	1	0.1	0.1	3	0.1	0.1
75+	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.1	0	0.0	0.0
Total	2 379	12.8	100.0	1 911	9.6	100.0	2 330	10.0	100.0	1 960	11.1	100.0	4 290	11.1	100.0

Table IV. Rubella in Poland 2011. Number of cases and incidence per 100,000 population by immunisation status and age group

Age (years)	Vaccinated			Not vaccinated			Lack of data	
	number of vaccinated*	number of cases	incidence rate	number of un-vaccinated*	number of cases	incidence rate	number of cases	%
0	.	19	.	.	265	.	28	0.7
1	340 509	184	54.0	61 687	102	165.4	66	1.5
2	400 927	201	50.1	7 486	13	173.7	37	0.9
3	402 018	228	56.7	3 777	8	211.8	31	0.7
4	379 510	282	74.3	2 336	8	342.5	31	0.7
5	361 648	305	84.3	1 707	9	527.2	41	1.0
6	350 304	294	83.9	1 062	9	847.5	37	0.9
7	339 844	283	83.3	17 147	7	40.8	25	0.6
8	323 669	202	62.4	142 437	71	49.8	26	0.6
9	319 098	176	55.2	29 712	40	134.6	17	0.4
10-14	.	420	.	.	53	.	44	1.0
15 +	.	171	.	.	424	.	133	3.1
Total	.	2 765	.	.	1 009	.	516	12.0

* vaccination against measles. rubella. mumps (MMR) on the basis of : "Vaccination in Poland in 2011". NIPH-NIH. 2012 Warsaw)

the WHO (in Poland the role of a reference laboratory fulfills Department of Virology NIPH - NIH).

The sensitivity and specificity of diagnosis of rubella in Poland remains at a very low level. This is an obstacle for assessment of the actual number of cases. In 2011, only 7 (0.2%) of the 4 290 reported cases were classified as confirmed, 2 as probable and all remaining 4 281 (99.8%) as possible with diagnosis based solely on clinical signs.

Rubella vaccination coverage and immunization status of the population in 2011.

Vaccination against rubella in 2011, consisted of two doses of live, attenuated vaccines against viruses combined measles, mumps and rubella (MMR). The dosage regimen of 2006 remains unchanged and assumes primary dose of 13-14 months of age and a booster dose at 10 years of age.

In 2011, in the whole country 98.1% of children in the 3rd year of life were vaccinated against rubella. Vaccination coverage varied between regions. The lowest percentage of vaccinees was reported in the province Mazowieckie (96.7%), the highest in the province Warmińsko-Mazurskie (99.8%). The percentage of girls at 12 years of age was vaccinated against rubella in the whole country was 99.1%, ranged from 100% in the province Warmińsko-Mazurskie to 98.4% in the province Mazowieckie. In 12% of cases data on vaccination were lacking. This percentage was slightly higher than in 2010 (11.7%), but significantly lower than in the years: 2007 (34%) and 2008 (18%).

SUMMARY AND CONCLUSIONS

In 2011, only 0.2% of cases of measles were confirmed by laboratory tests, and 99.8% of the cases were reported solely on the basis of the clinical symptoms. This situation requires prompt improvement. Polish participation in the elimination of rubella commits to confirmation the clinical diagnosis by laboratory tests.

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