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YERSINIOSIS IN POLAND IN 2011

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ABSTRACT

AIM. The aim of this study is to assess the epidemiology of yersiniosis in Poland in 2011 compared to previous years.
MATERIAL AND METHODS. We reviewed surveillance data published in the annual bulletin "Infectious diseases and poisonings in Poland" from 2006 to 2011 (MP Czarkowski et al., NIH and GIS) and individual yersiniosis case reports from 2011 sent by the Sanitary-Epidemiological Stations. Additionally, we use data from the Department of Demographic Surveys in Central Statistical Office.
RESULTS. In Poland in 2011 a total of 257 yersiniosis cases were reported including 238 cases of intestinal and 19 cases of extraintestinal yersiniosis; 74% of patients were hospitalized. The incidence rate was 0.67 per 100,000 inhabitants. No deaths related to the disease were reported. The most affected group in intestinal infections were children younger than 4 (63% of all cases); symptoms usually involved diarrhea (87%), fever (76%), abdominal pain (47%) and vomiting (31%). Extraintestinal form of infection was less common than in 2010 (27 cases) and usually involved symptoms from the osteoarticular system, noted in 79% of patients (15 cases). Similarly to previous year (2010) most cases of yersiniosis were reported from Mazowieckie province (91), and the least from the Podlaskie province (1). Serological types of *Yersinia enterocolitica* were identified in 102 cases (39.7%): serotype O8 (56.8%), O3 (41%) and O9 (>2%). There was one household outbreak involving 4 people.
CONCLUSIONS. Since 2006 in Poland in some areas of the country, occurrence of endemic infections caused by a type O8 is observed. A large percentage (60.3%) of unknown *Yersinia* serotypes is a consequence, that **physicians** do **not** always **request** serotyping. Additionally, the relatively low number of reported cases of extraintestinal yersiniosis in Poland may suggest underreporting, especially by rheumatological hospitals.

Key words*: yersiniosis, epidemiology, Poland, 2011*

Similarly to situation in Europe, yersiniosis after salmonellosis and campylobacteriosis, is one of the most common zoonosis in Poland. Cases of intestinal infection of *Yersinia* reported in Poland account for about 4% of all cases of yersiniosis reported in Europe (according to the *„Annual epidemiological report 2011 - Reporting on 2009 surveillance data and 2010 epidemic intelligence data", ECDC).* The median number of cases and incidence per 100 thousand inhabitants for the past five years amounted to - 253 and 0.66.

The aim of this paper is to assess the epidemiology of yersiniosis in Poland in 2011 against the previous years.

MATERIAL AND METHODS

The evaluation was based on national surveillance data published in annual bulletin "Infectious diseases and poisonings in Poland" for the years 2006-2011 (MP Czarkowski et al., NIH and GIS), individual yersiniosis case reports from 2011, sent by the Sanitary-Epidemiological Stations, and data from the Department of Demographic Surveys in Central Statistical Office.

In Poland, in epidemiological surveillance of intestinal yersiniosis, we use standard definition adopted in the European Union (confirmed – probable case). Additionally, extraintestinal yersiniosis is reported based

on national definition (definitions are available on www.pzh.gov.pl). Description of epidemiological situation of yersiniosis in Poland in 2011 includes: the number and distribution of cases in terms of age, region, isolated serotypes of *Yersinia* and clinical symptoms of disease.

RESULTS

In Poland in 2011. a total of 257 cases of yersiniosis were reported, the incidence rate was 0.67 per 100,000 inhabitans (Tab.I). A slow upward trend in the number of cases and incidence of yersiniosis in Poland in 2011 was maintained (Tab I.).

The percentage of hospitalized cases (74%), was slightly lower than last year (76%), but higher than the median for the years 2006-2008 (67.9%) (Tab.I). Relatively high percentage of hospitalized cases may be explained by the fact that yersiniosis is most common among children less than 4 (intestinal form) and older people, over 60 years of age (extraintestinal form) commonly assigned to the groups of severe illness.

Among young children, high rate of hospitalization is primarily associated with rapid dehydration occurence as a result of diarrhea.

All reported cases of intestinal yersiniosis met criteria for case confirmation. Additionally 19 cases of extraintestinal yersiniosis, 2 were classified as probable cases, and 17 - as confirmed. For comparison, in 2010 only 6 (22.2%) cases were classified as confirmed (Tab.II).

In 2011, according to data from the Department of Demographic Surveys in Central Statistical Office and individual case reports, there were no deaths related to *Yersinia enterocolitica* or *Yersinia pseudotuberculosis*. Cases of intestinal yersiniosis were reported in all provinces in 2011. The highest incidence rate was noted in Mazowieckie province (1.73 / 100 thous.) - more than 2.5 times higher than the incidence rate of yersiniosis in 2011 across the country. Cases reported in this single province (91 cases) accounted for 35% of all cases registered in Poland. The high incidence rate was also reported in Kujawsko-pomorskie province (1.47 / 100 thous.) and Malopolskie (0.99 / 100 thous.). As in previous years, the lowest number of cases was registered in Podlaskie province (incidence 0.08 / 100 thousand.) (Tab II).

Intestinal yersiniosis was most commonly diagnosed among children younger than 4 (62.6%). Extraintestinal yersiniosis occurred mostly in people over 60 age (7 persons), although sporadic cases of the disease were reported in all age groups (Tab III*.)*. No significant differences in incidence rate between men and women in age groups were observed.

The most common symptoms of intestinal yersiniosis were diarrhoea - 208 cases (87.4%), or diarrhoea with blood (almost 16% of patients) and a high fever (75.6%). In addition, the illness was accompanied by abdominal pain and vomiting, which occurred in: 47.5% and 36% of cases.

Cases of extraintestinal yersiniosis were reported from 9 provinces. Most of the cases occured in the Lubelskie province - 5 and Opolskie province - 4 cases (Tab.II). In both regions the number of reported extraintestinal cases was higher compared to the number of intestinal infections. This situation may indicate problems with recognition and / or possible underreporting. Remaining seven provinces reported only sporadic cases of extraintestinal infection of *Yersinia.* Predominated were symptoms from the osteoarticular system (15 cases). In addition, in four patients post-operative wound infection (3 people) and erythema nodosum (one patient) have been developed.

Serotype of isolated pathogenic *Yersinia* was determined only in 39.7% of all cases, which represents a slight increase compared to the previous year (34%); however percentage of non-serotyped strains differed by province. The regions in which about half or more isolated in 2011 *Yersinia* strains were serotyped are: Mazowieckie (ok.58%), Kujawsko-pomorskie and Slaskie - both at about 48%. Provinces where serotyping is not conducted despite reporting about 10 cases of yersiniosis every year are: Lubelskie and Pomorskie.

For the first time, among patients who had isolated *Yersinia* strains and then serotyped predominated infections caused by serotype O8 - 58 cases (56.9%). Most

Table I. Yersiniosis in Poland in 2006-2011. Median for: cases, incidence rate per 100,000 population and hospitalization in 2006-2008. Number of cases, incidence rate per 100,000 population, number and percentage of hospitalization in 2009-2011

Years	No. of cases per quarter				No. of cases	Incidence rate	Hospitalization	
	I	II	III	IV			No. of cases	%
2006-2008 Mediana	58	47	37	54	50,5	0,62	142	67,9
2009	45	185	62	34	326	0,85	248	76,1
2010	47	75	54	57	233	0,61	177	76
2011	56	77	57	67	257	0,67	190	74

Table II. Yersiniosis in Poland in years 2010-2011 by province. Number of confirmed and probable cases of intestinal and extraintestinal yersiniosis and incidence rate per 100,000 population

Province	All yersiniosis cases				Cases of intestinal yersiniosis				Cases of extraintestinal yersiniosis							
	2010		2011		2010		2011		2010				2011			
	No. of cases	Incidence rate	No. of cases	Incidence rate	Con-firmed	Incidence rate	Con-firmed	Incidence rate	Total	Incidence rate	Con-firmed	Probable	Total	Incidence rate	Con-firmed	Prob-able
1. Dolnośląskie	4	0.14	4	0.14	4	0.14	4	0.14	-	-	-	-	-	-	-	-
2. Kujawsko-pomorskie	19	0.92	31	1.48	19	0.92	29	1.38	-	-	-	-	2	0.10	2	-
3. Lubelskie	10	0.46	8	0.37	6	0.28	3	0.14	4	0.19	-	4	5	0.23	4	1
4. Lubuskie	5	0.50	4	0.39	5	0.50	3	0.29	-	-	-	-	1	0.10	1	-
5. Łódzkie	18	0.71	15	0.59	17	0.67	15	0.59	1	0.04	-	1	-	-	-	-
6. Małopolskie	33	1.00	33	0.99	33	1.00	33	0.99	-	-	-	-	-	-	-	-
7. Mazowieckie	48	0.91	91	1.73	44	0.84	89	1.69	4	0.08	2	2	2	0.04	2	-
8. Opolskie	13	1.26	5	0.49	4	0.39	1	0.10	9	0.87	1	8	4	0.39	4	
9. Podkarpackie	5	0.24	6	0.28	3	0.14	4	0.19	2	0.10	-	2	2	0.09	1	1
10. Podlaskie	1	0.08	1	0.08	1	0.08	1	0.08	-	-	-	-	-	-	-	-
11. Pomorskie	19	0.85	10	0.44	19	0.85	10	0.44	-	-	-	-	-	-	-	-
12. Śląskie	29	0.62	25	0.54	29	0.62	24	0.52	-	-	-	-	1	0.02	1	-
13. Świętokrzyskie	3	0.24	2	0.16	1	0.08	2	0.16	2	0.16	2	-	-	-	-	-
14. Warmińsko-mazurskie	10	0.70	3	0.21	9	0.70	3	0.21	1	0.07	1	-	-	-	-	-
15. Wielkopolskie	10	0.30	4	0.12	6	0.16	3	0.09	4	0.12	-	4	1	0.03	1	-
16. Zachodniopomorskie	6	0.35	15	0.87	6	0.35	14	0.81	-	-	-	-	1	0.06	1	-
RAZEM	233	0.61	257	0.67	206	0.54	238	0.62	27	0.07	6	21	19	0.05	17	2

Table III. Yersiniosis in Poland in 2011. Number of cases by age and sex

Age	Number of yersiniosis cases				
	Intestinal yersiniosis		Extraintestinal yersiniosis		Total
	Male	Female	Male	Female	
0	1	2	-	-	3
1	41	37	-	-	78
2	26	24	-	-	50
3	11	11	-	1	23
4	3	4	-	-	7
0-4	82	78	-	1	161
5-9	18	15	-	-	33
10-19	19	17	1	2	39
20-29	1	2	2	-	5
30-39	1	1	-	3	5
40-49	-	-	1	-	1
50-59	2	-	-	2	4
>60	-	2	1	6	9

of them have been recognized in Mazowieckie (26 cases) and Kujawsko-pomorskie (14 cases) provinces. Among them, 55 cases (95%) were intestinal yersiniosis. Number of infections caused by the so-called "American serotype" was almost three times higher compared to the previous year, but similar to the number of infections caused by this serotype in 2009. Based on data for the years 2008-2011, we can conclude that the disease caused by serotype O8 are endemic in Kujawsko-pomorskie, Małopolskie, Mazowieckie, Śląskie and Wielkopolskie provinces. Infections caused by serotype O8 have seasonal pattern, with a significantly higher number of cases reported in the first half of the year, especially during the spring months (April-May) (Fig. 1*)*.

Serotype O3 was isolated in 41.2% of all infections. As in previous years, less than 2% were infections caused by serotype O9 (Table IV).

Among hospitalized cases, the largest proportion of cases were with unknown serological type of *Yersinia* (64%), followed by serotype O8 (22.1%) and serotype O3 (12.6%). Among the 67 non-hospitalized cases, infections caused by serotypes O3 and O8 was respectively 26.8% and 23.8%. Among children under the age of 4 prevailed infections caused by serotype O8 (19.9% of cases). In addition, serotype O8 was isolated from patients in following age groups: 5-9 years (45.5% cases), 10-19 years (20.5% of the cases), 20-59 years (13.3% cases), and more than 60 years old (11.11% of cases). Infections caused by serotype O3 were most frequent in patients in the age group 10-19 years (25.6% of cases). Infections caused by this serotype have also been reported among children under 4 years of age (16.1% of the cases) and between 5 and 9 years of age (15.2%). In patients over 60 years of age infection with serotype O3 accounted 11.11% of cases.

In 2011. one household outbreak caused by *Yersinia* was reported in Poland, involving two adults and two children aged 0-3 years who were hospitalized. *Yersinia* isolates was not serotyped. Like in most small family outbreaks vehicle of the infection was not determined.

CONCLUSIONS

1. In 2011, in Poland, reported 257 cases of yersiniosis - including 238 cases of intestinal yersiniosis and 19 cases of extraintestinal yersiniosis.
2. The low number of reported cases of extraintestinal yersiniosis may suggest substantial underreporting of this disease in Poland, especially from hospitals with rheumatological wards.
3. Reported since 2006 in the regions: Kujawsko-pomorskie, Malopolskie, Mazowieckie, Śląskie and Wielkopolskie illnesses caused by serological type O8 indicate that this serotype is endemic in these areas.
4. A high percentage (60.3%) of *Yersinia* isolated from patients with unknown serogroup indicates that serotyping of isolated strains is not performed as part of routine diagnostic procedure. Makes it difficult to assess the epidemiological situation of infection by this pathogen, particularly "an American serotype"O8.

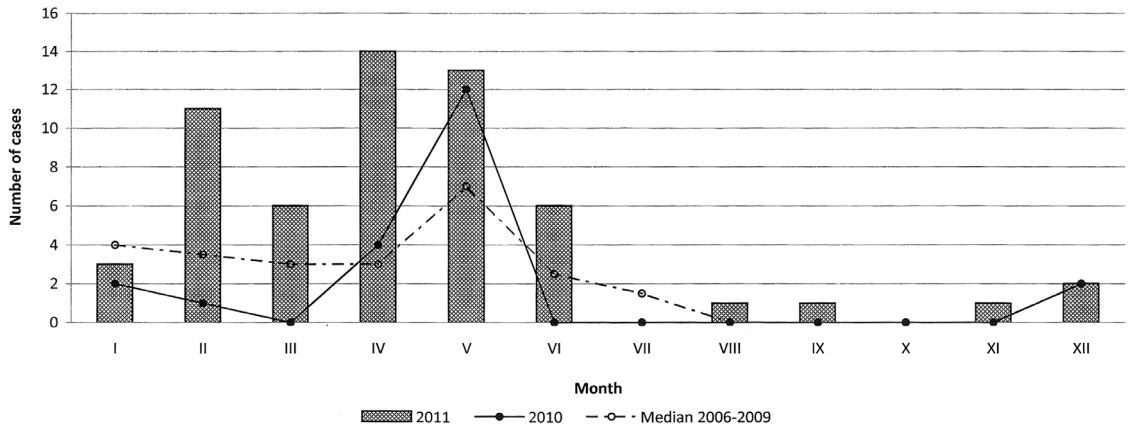

Fig.1 Yersinia enterocolitica O8 in Poland. Seasonality of occurrence.

Table IV. The serotypes of *Yersinia* strains isolated from cases in Poland in 2011 by province

Province	Intestinal yersiniosis				Extraintestinal yersiniosis			
	Serotypes				Serotypes			
	Y.enterocolitica			unknown	Y.enterocolitica			unknown
	O3	O8	O9		O3	O8	O9	
1. Dolnośląskie	1	-	-	3	-	-	-	-
2. Kujawsko-pomorskie	-	14	-	15	1	-	-	1
3. Lubelskie	-	-	-	3	-	-	-	5
4. Lubuskie	-	1	-	2	-	-	-	1
5. Łódzkie	1	1	-	13	-	-	-	-
6. Małopolskie	1	2	2	28	-	-	-	-
7. Mazowieckie	26	26	-	37	-	2	-	-
8. Opolskie	-	-	-	1	1	-	-	3
9. Podkarpackie	-	1	-	3	-	-	-	2
10. Podlaskie	-	-	-	1	-	-	-	-
11. Pomorskie	-	-	-	10	-	-	-	-
12. Śląskie	10	2	-	12	-	-	-	1
13. Świętokrzyskie	-	-	-	2	-	-	-	-
14. Warmińsko-mazurskie	-	2	-	1	-	-	-	-
15. Wielkopolskie	-	1	-	2	-	-	-	1
16. Zachodniopomorskie	1	5	-	8	-	1	-	-
TOTAL	40	55	2	141	2	3	0	14

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