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FOODBORNE BOTULISM IN POLAND IN 2011

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ABSTRACT

OBJECTIVES. The main objective of this article is to assess the epidemiology of foodborne botulism in Poland in 2011, using national surveillance data.
MATERIALS AND METHODS. We reviewed surveillance data published in the annual bulletin "Infectious diseases and poisonings in Poland" from 2005 to 2011, and botulism case reports from 2011 sent to the Department of Epidemiology NIPH-NIH by Sanitary-Epidemiological Stations.
RESULTS. In 2011, a total of 35 foodborne botulism cases (including 21 laboratory confirmed cases) was reported, corresponding to the one of the lowest annual incidence rate (0.09 per 100,000 population) since the introduction of botulism as mandatory notifiable disease. The higher incidence rates compared to the previous year were in the Warmińsko-Mazurskie, Kujawsko-Pomorskie, Lubelskie, Podkarpackie, Mazowieckie and Dolnośląskie. Incidence in rural areas (0.13 per 100,000 population) was higher than the incidence in urban areas (0.07). Men, had more than 3,5 times higher incidence than women; the highest incidence rate (0.23 per 100,000 population) was observed among men in the age group of 60 + years. Most cases were associated with consumption of commercially canned meat (including pork and other types of meat). Home canned foods containing meats or vegetables and meats were also a common vehicle. Almost all cases were hospitalized (33 cases). One death related to the disease was reported.
CONCLUSIONS. In 2011, in Poland epidemiology of the foodborne botulism remains stable. From the point of view of national surveillance, it is necessary to increase the percentage of cases investigated with laboratory tests.

Keywords: *botulism, food poisoning, epidemiology, Poland, 2011*

INTRODUCTION

Botulism (botulism) is a mandatory notifable disease, under national surveillance since 1963. Initially, all cases reported by physicians based on clinical symptoms (regardless of laboratory confirmation), were registered. In 2005, EU case definition for botulism ("confirmed" / "probable" case) have been implemented, which require both clinical and laboratory evidence or clinical evidence and epidemiological link (exposure from the same source). However, given limited laboratory capacity, in national surveillance we also use "possible" case definition for cases reported by physicians based on clinical symptoms (with no laboratory confirmation) what corresponds to previous practice in Poland, and thus allows to maintain comparability of data over time.

The aim of this article is to assess the epidemiology of foodborne botulism in Poland in 2011, using national surveillance data.

MATERIALS AND METHODS

We reviewed surveillance data from the following sources:
- annual bulletin "Infectious diseases and poisonings in Poland" for the years 2005-2011 (NIPH-NIH, GIS, Warsaw);
- botulism case reports from 2011 sent to the Department of Epidemiology NIPH-NIH by Sanitary-Epidemiological Stations.

Reported by physicians cases of foodborne botulism depending on the level of evidence were classified as "confirmed" or "possible" in accordance with standard definition adopted in the European Union and published in Commission Decision of 28 April 2008 amending Decision 2002/253/EC. Cases reported on the basis of clinical symptoms (without laboratory or epidemiological evidence) were classified as "possible".

RESULTS

In 2011, in Poland a total of 35 foodborne botulism cases were reported. Although, there is an increase by 3 cases compared to 2010, case counts show noticeable steady decline - decrease by 11 cases compered to median for years 2005-2009 (Tab. I). Incidence rates have been declining over recent years. However, the decline began to slow considerably since 2005 (Fig. 1). Annual incidence (0.09 per 100 000 population) reported in 2011 was one of the lowest since the introduction of botulism as mandatory notifiable disease in Poland.

Considering geographical pattern, a higher incidence in 2011 compared to 2010 was noted in 6 provinces (Table I). Apart from a higher incidence in belt of the eastern provinces, there is also relatively high incidence in Wielkopolskie and Pomorskie. The highest incidence of foodborne botulism in the country - more than 0.30 per 100 000 population - were reported in provinces Lubelskie and Warmińsko-Mazurskie. In five provinces - Lubuskie, Małopolskie, Opolskie, Śląskie and Świętokrzyskie - no foodborne botulism cases have been reported in 2011.

Laboratory-confirmed cases (confirmed by detection of botulinum toxin in a clinical specimen taken from the patient) accounted for only 60% (21 cases) of the total number of reported cases. As in previous years, most cases of foodborne botulism (18 cases) were caused by toxin B, additionally in 4 patients were detected both toxin B and toxin E.

Table I. Foodborne botulism in Poland. Number of cases and incidence (per 100,000 population) by province, 2005-2011

Province		Median 2005-2009		2010		2011	
		number of cases	incidence	number of cases	incidence	number of cases	incidence
	POLAND	46	0.12	32	0.08	35	0.09
1.	Dolnośląskie	1	0.03	-	-	1	0.03
2.	Kujawsko-pomorskie	4	0.19	-	-	2	0.10
3.	Lubelskie	6	0.27	5	0.23	7	0.32
4.	Lubuskie	-	-	-	-	-	-
5.	Łódzkie	-	-	2	0.08	2	0.08
6.	Małopolskie	1	0.05	3	0.09	-	-
7.	Mazowieckie	3	0.06	2	0.04	5	0.09
8.	Opolskie	2	0.19	-	-	-	-
9.	Podkarpackie	2	0.10	-	-	2	0.09
10.	Podlaskie	4	0.33	4	0.34	1	0.08
11.	Pomorskie	3	0.14	3	0.13	3	0.13
12.	Śląskie	2	0.04	1	0.02	-	-
13.	Świętokrzyskie	1	0.08	-	-	-	-
14.	Warmińsko-mazurskie	2	0.14	2	0.14	5	0.34
15.	Wielkopolskie	14	0.41	6	0.18	5	0.14
16.	Zachodniopomorskie	2	0.12	4	0.24	2	0.12

Data source: Infectious diseases and poisonings in Poland (annual report). NIPH-NIH, CSI, Warsaw, 2005-2011

More than 30% of foodborne botulism (11 cases) were reported by physicians based on clinical symptoms and information about consumption before onset of symptoms potentially improperly canned / pasteurized products. Three cases of foodborne botulism were reported as "probable" - on the basis of clinical evidence and epidemiological link (exposure from the same source as laboratory-confirmed case).

In recent years, due to decline in the number of cases reported annually, typical seasonal pattern of ill-

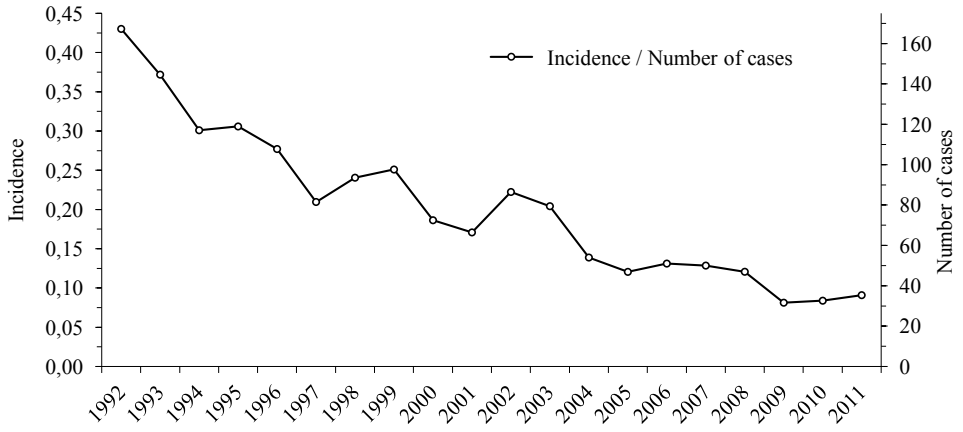

Fig. 1. Foodborne botulism in Poland. Number of cases and incidence (per 100,000 population), 1992-2011

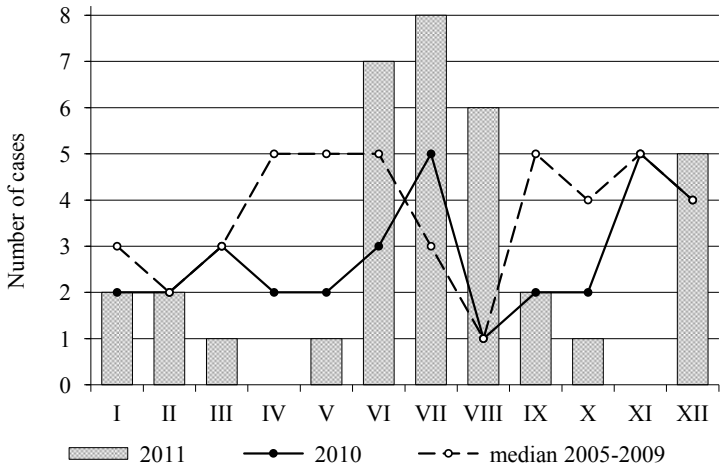

Fig. 2. Foodborne botulism cases in Poland by month of onset, 2005-2011

Table II. Foodborne botulism in Poland. Number of sporadic and cluster associated cases by location (urban/rural), 2011

Cases		Urban			Rural			Total		
		number of clusters	number of cases	% of cases	number of clusters	number of cases	% of cases	number of clusters	number of cases	% of cases
Sporadic		x	5	31.3	x	19	100.0	x	24	68.6
Cluster associated	2 persons	2	4	25.0	-	-	-	2	4	11.4
	3 persons	1	3	18.8	-	-	-	1	3	8.6
	4 persons	1	4	25.0	-	-	-	1	4	11.4
	total	4	11	68.8	-	-	-	4	11	31.4
Total		4	16	100.0	-	19	100.0	4	35	100.0

Data source: botulism case reports from 2011 sent to the Department of Epidemiology NIPH-NIH by Sanitary-Epidemiological Stations

ness seems to disappear, although most cases in 2011 occurred in summer (June to August) (Fig. 2).

As in previous years, majority of cases were sporadic (24 cases). Only four small outbreaks have been reported – there were two outbreaks involving 2 people and one outbreak involving 3 and 4 people (Table II).

The incidence in rural areas was higher than in urban areas, especially in older age groups. Foodborne botulism affects men more often than women – the incidence among men was 3,5 times higher than incidence among women; the highest incidence rate (0,23 per 100,000 population) was observed among men in the age group of 60+ years. (Table III). The age of patients ranged

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

Age	Gender						Location						Total		
	men			women			urban			rural					
	number of cases	incidence	%	number of cases	incidence	%	number of cases	incidence	%	number of cases	incidence	%	number of cases	incidence	%
0 - 4	-	-	-	1	0.10	12.5	1	0.08	6.3	-	-	-	1	0.05	2.9
5 - 9	1	0.11	3.7	1	0.11	12.5	2	0.20	12.5	-	-	-	2	0.11	5.7
10 - 14	2	0.20	7.4	-	-	-	2	0.19	12.5	-	-	-	2	0.10	5.7
15 - 19	-	-	-	1	0.09	12.5	1	0.08	6.3	-	-	-	1	0.04	2.9
20 - 24	3	0.21	11.1	-	-	-	1	0.06	6.3	2	0.17	10.5	3	0.11	8.6
25 - 29	3	0.18	11.1	2	0.12	25.0	4	0.20	25.0	1	0.08	5.3	5	0.15	14.3
30 - 39	3	0.10	11.1	1	0.03	12.5	2	0.05	12.5	2	0.09	10.5	4	0.07	11.4
40 - 49	2	0.08	7.4	1	0.04	12.5	-	-	-	3	0.15	15.8	3	0.06	8.6
50 - 59	6	0.21	22.2	-	-	-	1	0.03	6.3	5	0.24	26.3	6	0.10	17.1
60 +	7	0.23	25.9	1	0.02	12.5	2	0.04	12.5	6	0.22	31.6	8	0.10	22.9
Total	27	0.14	100.0	8	0.04	100.0	16	0.07	100.0	19	0.13	100.0	35	0.09	100.0

Data source: botulism case reports from 2011 sent to the Department of Epidemiology NIPH-NIH by Sanitary-Epidemiological Stations

Table IV. Foodborne botulism in Poland. Number and percentage of cases by food vehicle and location (urban/rural), 2011

Suspected food vehicle		Urban		Rural		Total	
		n	%	n	%	n	%
Canned pork	commercial	4	25.0	-	-	4	11.4
	homemade	-	-	3	15.8	3	8.6
Different types of canned meat	commercial	1	6.3	3	15.8	4	11.4
	homemade	2	12.5	2	10.5	4	11.4
Canned fish	commercial	-	-	1	5.3	1	2.9
	homemade	1	6.3	1	5.3	2	5.7
Canned meat and vegetables	commercial	-	-	-	-	-	-
	homemade	6	37.5	1	5.3	7	20.0
Canned mushrooms, fruits and vegetables	commercial	2	12.5	-	-	2	5.7
	homemade	-	-	1	5.3	1	2.9
Sausages and cured meat products	commercial	-	-	1	5.3	1	2.9
	homemade	-	-	1	5.3	1	2.9
Meat dishes	commercial	-	-	-	-	-	-
	homemade	-	-	1	5.3	1	2.9
Other		-	-	-	-	-	-
Not determined		-	-	4	21.1	4	11.4
Total		16	100.0	19	100.0	35	100.0

Data source: Botulism case reports from 2011 sent to the Department of Epidemiology NIPH-NIH by Sanitary-Epidemiological Stations

from 1 to 87 years, but cases occurs predominately in adults - median age 39 years (interquartile range 35).

Many cases of foodborne botulism resulted most likely from eating commercial or home canned pork or other meats. Home-canned meats and vegetables were also responsible for a relatively large number (a total of 20% of all cases) of botulism cases (Table IV). It should be noted, that food sources or products causing illness have been indicated based on the information about consumption before onset of symptoms potentially improperly canned / pasteurized products. In no case, laboratory evidence have been found in food samples.

The most commonly reported symptoms were blurred vision (83%), difficulty in swallowing, dry mouth (74%), and ptosis (51%); gastrointestinal symptoms including vomiting (51%), abdominal pain (49%), constipation (34%) were also common symptoms of illness.

More than half of the cases (15 patients, 52% of records with information on clinical course of illness) had a clinical course described from mild to moderate, the rest (14 patients) had severe / sub-severe course of illness. According to data of State Sanitary Inspection, there has been one death (male, 55 years old, living in rural areas) related to the disease. Almost all patients required hospitalization (33 cases), the duration of hospitalization ranged from 2 to 43 days (median 12 days).

SUMMARY AND CONCLUSIONS

In 2011, epidemiology of foodborne botulism in Poland remains stable. Annual foodborne botulism case count, geographical distribution of cases and other trends are similar to those observed over the past few years. From epidemiological surveillance point of view it is necessary to increase the percentage of cases investigated with laboratory tests.

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