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LYME DISEASE IN POLAND IN 2012

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ABSTRACT

INTRODUCTION. In Poland registration of all cases of Lyme disease is conducted by the Epidemiological Unit of National Institute of Public Health – National Institute of Hygiene. Most cases of Lyme disease occur in the North- East region of Poland; however, it is important to note that the disease is no longer solely a problem of this region of Poland.

OBJECTIVES. The aim of this work is to assess the epidemiological situation of Lyme disease in Poland in 2012 as compared to the situation in the previous years.

MATERIALS AND METHODS. Assessment of the epidemiological situation of Lyme disease in Poland was made on the basis of an analysis of individual notifications of suspected Lyme disease submitted to NIZP-NIH by the Provincial Sanitary- Epidemiological Stations; as well as data from “Infectious diseases and poisoning in Poland in 2012” bulletin, and “Vaccinations in Poland in 2012” bulletin (MP Czarkowski and Co, Warsaw 2013, NIPH-NIH, NCI).

RESULTS. In 2012 there were 8 782 registered cases of Lyme disease and it is 4,3% higher than in the previous year. The overall incidence in the country amounted to 23.8 per 100 000 people. The highest incidence rate was recorded in Podlaskie province - 75.5 per 100 000 people. 2 063 people were hospitalized due to Lyme disease.

SUMMARY AND CONCLUSIONS. In 2012 incidence rate of Lyme disease was gradually dropping down. The registered number of cases was reduced by 4,1 % in comparison to the previous year. There is still a fairly low percentage of cases detected with diagnostic test called Western blot method.

Key words: *Lyme disease, epidemiology, Poland, 2012*

INTRODUCTION

Lyme disease is a tick-born multi- organ infectious disease transmitted to humans by the bite of infected tick of the species *Ixodes*. While the majority of cases of Lyme disease are detected in the North- East region of the country, the disease is present in the whole area of Poland (Fig.1. Lyme disease in Poland between 1998 and 2012. Incidence rate per 100 000 people).

OBJECTIVE

The aim of this work is the assessment of the epidemiological situation of Lyme disease in Poland in 2012 as compared to the situation in previous years.

MATERIALS AND METHODS

Assessment of the epidemiological situation of Lyme disease in Poland was made on the basis of an analysis of individual notifications of suspected Lyme disease submitted to NIZP-NIH by the Provincial Sanitary- Epidemiological Stations; as well as data from “Infectious diseases and poisoning in Poland in 2012” bulletin, (MP Czarkowski and Co, Warsaw 2013, NIZP- PZH, GIS). Classification for Lyme disease cases in 2012 was based on case definitions developed for epidemiological surveillance in years 2012-2013 (“Definitions of infectious disease cases for epidemiological surveillance” 2012, Department of Epidemiology NIZP-PZH). According to formal classification cases that were confirmed and suspected

Table I. Lyme disease in Poland in 2009-2012. Number of cases and incidence per 100 000 population by province

Provinces	2009		2010		2011		2012	
	cases	incidence	cases	incidence	cases	incidence	cases	incidence
POLAND	10 329	27.1	9 003	23.6	9 157	23.8	8 782	22.8
1. Dolnośląskie	801	27.8	558	19.4	658	22.6	472	16.2
2. Kujawsko-pomorskie	378	18.3	356	17.2	327	15.6	349	16.6
3. Lubelskie	784	36.3	739	34.3	848	39	659	30.4
4. Lubuskie	283	28	357	35.3	294	28.7	278	27.2
5. Łódzkie	347	13.6	214	8.4	228	9	221	8.7
6. Małopolskie	1045	31.7	767	23.2	724	21.7	831	24.8
7. Mazowieckie	878	16.8	902	17.2	840	15.9	749	14.2
8. Opolskie	346	33.5	301	29.2	338	33.3	353	34.9
9. Podkarpackie	659	31.4	673	32	703	33	673	31.6
10. Podlaskie	1358	114	904	76	910	75.7	976	81.4
11. Pomorskie	179	8	138	6.2	206	9	301	13.2
12. Śląskie	1766	38	1520	32.8	1719	37.1	1637	35.4
13. Świętokrzyskie	163	12.8	179	14.1	155	12.1	109	8.5
14. Warmińsko-mazurskie	754	52.8	884	61.9	782	53.8	693	47.7
15. Wielkopolskie	349	10.3	256	7.5	183	5.3	215	6.2
16. Zachodniopomorskie	239	14.1	255	15.1	242	14	266	15.4

Source: Interviews epidemiological SES, development NIPH-NIH

were isolated. Suspected cases were classified if a person was fulfilling clinical criteria for late phase of the disease or if the person was excluded for another reason, while confirmed case was a person meeting the criteria for an early phase of the disease without laboratory confirmation, or every person who fulfilled clinical and laboratory criteria. Every person who has symptoms of late or early phase of the disease fulfils clinical criteria, however laboratory criteria include:

- For all for all types of Lyme disease- isolation of *Borrelia burgdorferi* spirochetetes from clinical specimen
- For arthritis type- high titre of specific IgG antibodies
- For neuroborreliosis- demonstration of local synthesis of specific antibodies in central nervous system and/or significant increase of specific antibodies in serum
- For cardio- vascular borreliosis and lymphocytic – significant increase of specific antibodies in serum.

It is recommended to confirm presence of antibodies using the Western blot test method.

RESULTS

In 2012 there were 8 782 registered cases of Lyme disease, that is less by 4.1% in comparison with the previous year (Tab. 1. Lyme disease in Poland 2009-2012. Number of cases and incidence per 100 000 population by province). The overall incidence in the country amounted to 22,8 per 100 000 people and it was lower by 1% in comparison to the previous year. Additionally, there was a considerable variation in incidence

rate according to the region: from 6,2 in Wielkopolskie province to 81,4 in Podlaskie province (Tab. 1: Lyme disease in Poland 2009-2012. Number of cases and incidence per 100 000 population by province).

In 2012 the combined number of cases in following four provinces : Śląskie, Podlaskie, Mazowieckie, and Małopolskie constituted 48% of all cases in the country. Compared to the year 2011, there was a decrease in incidence of the disease in nine provinces - the largest in Lubelskie provinces by 189 incidences and Dolnośląskie by 186. The highest incidence rate of the disease was recorded in Małopolskie and Pomorskie provinces – increase by 104 and 95 cases respectively. In an overall number of cases 28% cases were diagnosed by laboratory tests in accordance with the disease definition, in this 16,3 by Western blot test. From the surveys submitted by Sanitary- Epidemiological Stations to the Department of Epidemiology NIPH-NIH it can be concluded that in 2012 similarly to previous years more than half cases of Lyme disease were among city population, mainly retirees (29,5%) as well as white and blue collar workers (27%). Compared to other groups the incidence rate among foresters and farmers was relatively low and amounted to 2.2% and 6.8% respectively The most cases of disease in 2012 similarly to previous years affected adults >30 years old and older adults, who in total amounted to 86% of all cases . Similarly to 2011, women contracted the disease more often than men (58% of all reported cases were in females).

In 2012 skin changes occurred in 72.6% of patients, demonstrated by erythema, redness, and/or swelling, furthermore in 0.1% of patients late skin symptoms occurred demonstrating by returning erythema, change of skin texture such as nodule or rash. Symptoms of

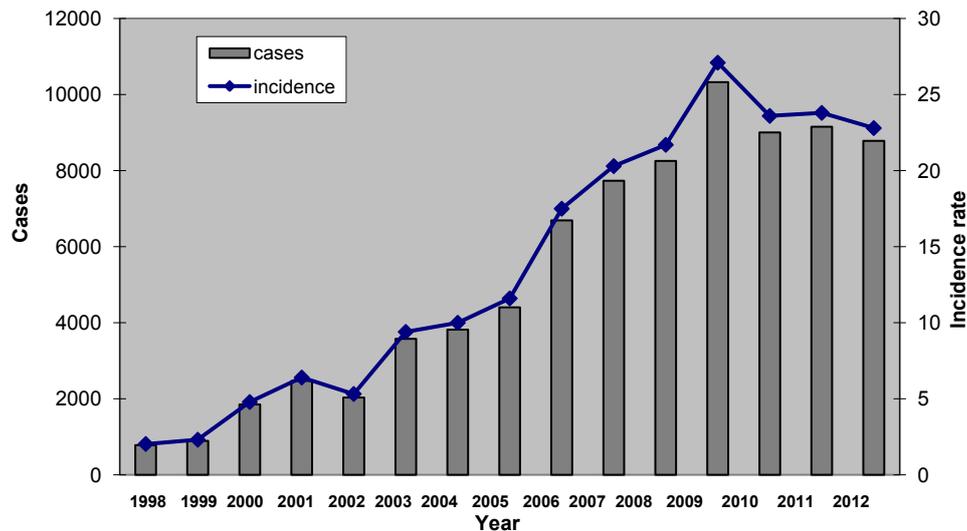


Fig. 1. Lyme disease in Poland in 1998-2012. Incidence per 100 000 population

joint inflammation and swelling occurred in 33% of all patients. Cardio-vascular symptoms such as arrhythmia, atrioventricular block and inflammation of the myocardium occurred in 0.7% of patients. Among the central nervous system symptoms which occurred in 1.6% of patients, dominated meningitis, encephalitis and myelitis suggestive of disease occurrence in the nervous system. In all these patients the diagnosis was confirmed by positive test result of cerebrospinal fluid. In addition in 12% of patients peripheral nervous system symptoms were recorded. These were: facial palsy, ophthalmoplegia, radicular syndrome as well as other changes referred to generally as neuro-pathological.

MICROBIOLOGICAL DIAGNOSIS OF LYME DISEASE

Microbiological diagnosis of Lyme disease plays a vital role in diagnosis of Lyme disease. Currently ELISA test detects IgM and IgG class antibodies. Due to the possibility of obtaining false positive result (test is characterised by high sensitivity at a lower specificity) two phase diagnostic protocol is used including ELISA test which if the result is positive or dubious, Western blot test is used to confirm the diagnosis.

In 2012 positive serological test results were obtained in 28% of patients suspected of contacting Lyme

disease. In 16.3% of these patients Western blot test was used to confirm the diagnosis. It should be noted that in a patient with spreading erythema diagnosis is based only on clinical symptoms, without a need of serological confirmation.

In 2012 doctors used tetracycline antibiotics (54% of all diseased people) and penicillin based antibiotics (16% of all diseased people). In 2012, 2 063 (23,5%) people were hospitalized due to Lyme disease.

SUMMARY AND CONCLUSION

In 2012 as in the previous year there was a reduction in the number of cases of Lyme disease. The highly reliable diagnostic Western blot test is still performed relatively rarely..

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