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*Prevalence of infections of the Salmonella strains in the Lublin  
voivodeship and in Poland in the years 1980-2000*

Salmonellosis are infections caused by *Salmonella* strains. In the world there were isolated over 2,500 serotypes of *Salmonella* strains, of which around 60 types are found in Poland. In our country the infections are mainly caused by the following strains: *Salmonella enteritidis* – about 90%, *Salmonella typhimurium* – about 6% as well as *Salmonella virchow*, *hadar*, *infantis*, *agona* – about 5% (1, 7).

The aim of the paper is presentation of the prevalence of infections of the *Salmonella* strains in the Lublin voivodeship in the years 1980-2000 in comparison with their prevalence over the whole country in the same period.

MATERIAL AND METHODS

The analysed material comprised epidemiological data concerning the incidence rates of salmonellosis registered in Poland in the years 1980-2000. The data come from health service units in the Lublin voivodeship and in the whole country and are published by the State Hygiene Office in the form of “Reports on incidence of infectious diseases, intoxications and hospital infections”. There were studied the incidence rates of salmonellosis in total and divided into gastrointestinal and extraintestinal infections registered in the Lublin voivodeship and Polish population in the years 1980-2000 in accordance with the “International Statistical Classification of Diseases and Related Health Problems (X Revision)”.

Table 1. Total salmonellosis as well as divided into gastrointestinal and extraintestinal infections in the Lublin voivodeship and Poland in the years 1980-2000.

Incidence rates per 100 thousand population. Numbers in accordance with ICD-10

Year	Total salmonellosis (A02)		Of which gastrointestinal infection (A02.0)		Of which extraintestinal infection (A02.1-A02.9)	
	Lublin voivodeship	Poland	Lublin voivodeship	Poland	Lublin voivodeship	Poland
1980	36.6	41.1	2.7	14.1	33.9	27.0
1981	72.3	51.0	22.2	21.0	50.1	30.0
1982	40.0	44.4	14.0	17.9	26.0	26.5
1983	74.2	48.6	12.2	17.3	62.0	31.3
1984	157.0	82.3	57.5	32.3	99.5	50.0
1985	143.2	105.1	57.5	46.2	85.7	58.9
1986	123.6	127.5	22.2	60.0	101.4	67.5
1987	91.6	130.8	31.7	70.7	59.9	60.1
1988	95.2	162.5	61.0	93.2	34.2	69.3
1989	166.2	141.4	125.4	81.5	40.8	59.9
1990	213.5	130.2	143.9	74.7	69.6	55.5
1991	130.9	136.3	99.8	81.4	31.1	54.9
1992	134.0	109.6	95.0	64.0	39.0	45.6
1993	92.7	81.0	70.1	50.0	22.6	31.0
1994	96.4	94.2	96.4	94.1	0	0.17
1995	114.5	77.9	114.5	77.8	0	0.17
1996	78.2	67.6	78.2	67.5	0	0.14
1997	67.6	60.0	67.6	59.9	0	0.13
1998	102.4	69.1	102.4	68.9	0	0.16
1999	99.4	60.6	99.3	60.4	0.09	0.14
2000	99.1	58.9	99.0	58.7	0.04	0.21

## RESULTS

The gathered data concerning the incidence rates of salmonellosis in total and divided into gastrointestinal and extraintestinal infections, in accordance with the "International Statistical Classification of Diseases and Related Health Problems (X Revision)", are presented in Table 1. The epidemiological trends in incidence are presented in Figs 1 and 2, respectively.

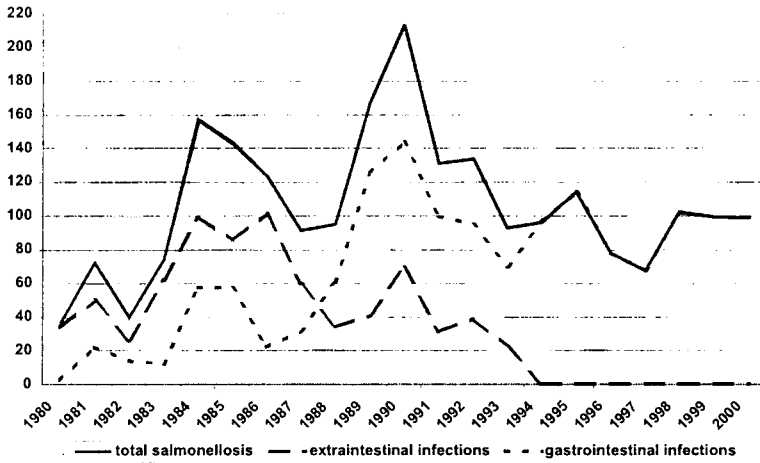


Fig. 1. Total salmonellosis as well as divided into gastrointestinal and extraintestinal infections in the Lublin voivodeship in the years 1980-2000

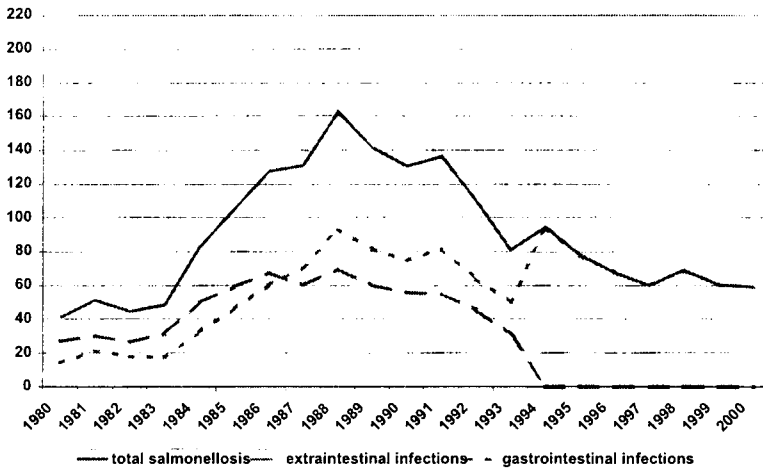


Fig. 2. Total salmonellosis as well as divided into gastrointestinal and extraintestinal infections in Poland in the years 1980-2000

## DISCUSSION

In 1971 in Poland there was changed the way of registration of infections caused by *Salmonella* strains. In the group of foodborne infections and intoxications there was included the subgroup of acute gastroenteritis caused by *Salmonellas*. At the same time the group called "other salmonellosis" was maintained and defined as extraintestinal salmonellosis. Such modification produced ambiguity in classification of infections caused by

the same bacterium. Worse still, some of the voivodeships registered all salmonellosis of animal source as foodborne infections, other – as extraintestinal salmonellosis, while some cases were reported in both groups at the same time. The rules of registration of salmonellosis were changed again in 1994. All the infections caused by *Salmonellas* producing symptoms of gastroenteritis were qualified as foodborne infections and intoxications, while cases with symptoms other than gastroenteritis were registered as “other salmonellosis” (8). There was also introduced obligatory notification of cases of extraintestinal salmonellosis.

In consequence in statistics of many voivodeships extraintestinal salmonellosis practically disappeared. In several voivodeships no cases of extraintestinal form of the disease have been reported since 1994 and in 1996 it was not reported in as many as 26 voivodeships, including the Lublin voivodship (2). In the years 1994-1998 in the Lublin province all the infections caused by *Salmonella* strains were registered in the group of foodborne infections and intoxications (9).

Despite the ambiguity in classification of salmonellosis of animal source, there is possible the analysis and evaluation of the epidemiologic situation of salmonellosis in total in the Lublin voivodship and in Poland. In the studied period the number of cases of infections with *Salmonella* strains increased considerably. Constantly increasing trend in incidence rates in our country, registered since the beginning of the 1980s, made Poland one of the countries characterized by the highest incidence rates in Europe. However, it must be noted that at the same time there increased the number of cases of the disease in Europe, as well (8, 10).

The increase in incidence rates of salmonellosis was noted also in the Lublin voivodship after 1980 (5). There were observed epidemic intensifications of the rates in 1984 and 1990, when total incidence of salmonellosis in the region surpassed the nationwide rates (5).

Administrative decisions and improvements in sanitary situation in our country caused appearance of favourable, decreasing trends of incidence rates of salmonellosis. After 1988 throughout Poland and after 1990 in the Lublin voivodship there was observed gradual decline in incidence of infections caused by *Salmonellas* (5). In 1997 the epidemiological situation of salmonellosis in the population of the Lublin region and the nationwide situation were comparable, but in the following year the incidence in the Lublin voivodship rose again (3, 4).

As the causes of occurrence of epidemics of infections caused by *Salmonella* strains there can be numbered the deterioration of the epizootic situation of farm animals, mainly poultry as well as spreading of *Salmonellas* among them, use of fodder additives of animal source and increase in the number of animals in farms (6). Surveillance of quality and distribution of food of animal origin weakened, which caused the decline in its quality (8). Lack of appropriate control of transport, processing and distribution of food produced the rise in number of cases of foodborne infections and intoxications in canteens, cafeterias and fast food restaurants. The requirements concerning laboratory

tests of animal fodders and food of animal source imported to our country were reduced. The decrease in incidence rates observed in Poland and in the Lublin voivodeship since the beginning of the 1990s testifies to recent improvement in sanitary state of the country, hygiene of production and distribution of food as well as to efficient elimination of carriers of *Salmonella* strains from employment in food industry. However, the statistics concerning extraintestinal infections with *Salmonellas* are still unreliable, especially in the Lublin voivodeship.

### CONCLUSIONS

1. Since the beginning of the 1980s in Poland there was observed a constantly increasing trend in incidence rates of salmonelloses.

2. After 1988 throughout Poland and after 1990 in the Lublin voivodeship there was noted gradual decline in incidence of infections caused by *Salmonellas*.

3. Administrative decisions and recent improvements in sanitary situation in our country were the cause of that favourable, decreasing trend of incidence rates of salmonelloses.

4. The statistics concerning extraintestinal infections with *Salmonellas* are still unreliable, especially in the Lublin voivodeship.

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## SUMMARY

The aim of the paper is presentation of the prevalence of infections of the *Salmonella* strains in the Lublin voivodeship in the years 1980-2000 in comparison with their nationwide prevalence in the same period. The analysed material comprised epidemiological data concerning the incidence rates of salmonellosis registered in Poland in the studied period. Since the beginning of the 1980s there was observed a constantly increasing trend in incidence rates of salmonellosis. After 1988 throughout Poland and after 1990 in the Lublin voivodeship there was noted gradual decline in incidence of infections caused by *Salmonellas*. Administrative decisions and recent improvements in sanitary situation in our country caused appearance of that favourable, decreasing trend of incidence rates of salmonellosis. The statistics concerning extraintestinal infections with *Salmonellas* are still unreliable, especially in the Lublin voivodeship.

### Rozpowszechnienie zakażeń pałeczkami *Salmonella* w województwie lubelskim i w Polsce w latach 1980-2000

Celem pracy jest prezentacja rozpowszechnienia zakażeń pałeczkami *Salmonella* w województwie lubelskim w latach 1980-2000 na tle sytuacji ogólnopolskiej. Materiał stanowiły dane epidemiologiczne dotyczące zapadalności na salmonelozy w Polsce w badanym okresie. Od początku lat osiemdziesiątych obserwowano rosnący trend w zapadalności na salmonelozy. Po roku 1988 w całej Polsce, a po roku 1990 na terenie województwa lubelskiego obserwowano stopniowy spadek zapadalności na zakażenia powodowane przez pałeczki *Salmonella* w efekcie podjętych odpowiednich kroków administracyjnych i polepszenia się sytuacji sanitarnej w naszym kraju. Nadal nierzetelne są statystyki zakażeń pozajelitowych, zwłaszcza m.in. w woj. lubelskim.