

EPIDEMIOLOGICAL STUDY

Increasing trend in syphilis

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ABSTRACT

OBJECTIVES: The aim of this study was to evaluate the epidemiological situation of syphilis in the Slovak Republic in the period of the past two decades.

BACKGROUND: In last decade, the incidence of syphilis has decreased in European countries by 13 %. However, several countries reported an increase in the trend of syphilis.

METHODS: Cases of syphilis reported to the National Health Information Center in the Slovak Republic were statistically evaluated.

RESULTS: In the first decade syphilis possessed an increase rate 262.5 % and 127.6 % in five subsequent year intervals, and then the rate fluctuated and showed minimal decrease in the last three years. The highest rate 7.3 per 100 000 population documented in 2009. The peak in the Bratislava region reached 36.36 in 2000. Epidemic was documented in marginalized group in East region. Early syphilis was the most frequent stage observed in both decades but late and no specified cases increased in the last period. The M/F rate was up to 1.7, the most frequently recorded age category was 15–24 years.

CONCLUSION: These results indicate a requirement for developing a comprehensive control and educational program in the overall population, particularly in marginalized groups, and improving case management by health providers (Fig. 3, Ref. 20). Text in PDF www.elis.sk.

KEY WORDS: syphilis, STI, sexual health, epidemiology, surveillance.

Introduction

Sexually transmitted infections (STIs) are the most common infections of public health importance in Europe and worldwide. STIs are common in all countries regardless of level of economic development. Similar behaviors, such as frequent unprotected intercourse with different partners, place people at high risk of transmission. Syphilis is one of the most important STIs because of its consequences when left not treated. Although STIs are mostly transmitted through sexual intercourse, syphilis transmission can also occur from mother to child during pregnancy and childbirth. The World Health Organization (WHO) estimates that approximately 11 million new cases of syphilis occur worldwide every year, with the bulk occurring in South-East Asia (4m) and Sarah Africa (3.8 m) (1). In European regions, much higher syphilis rates are observed in Eastern and Central Europe than in Western Europe (2). The advent of HIV infection and mobility of population groups lead to increasing levels of syphilis in many geographical regions. The need for an effective epidemiological study of STIs, particu-

larly syphilis, in public health is greater now than in the past. The control of syphilis should be considered a public good, and public resources need to be found to advance the necessary research. Accurate epidemiological information about the distribution of syphilis is important to target screening and intervention programs.

The aim of this study is to evaluate the epidemiological trends in the rates of syphilis in the Slovak Republic over the period 1991–2013, and to place the results into European epidemiological surveillance.

Material and methods*Surveillance system in the Slovak Republic*

All physicians and other health providers must notify the Health Information Center in the Slovak Republic of clinically and serologically confirmed cases of syphilis. Other clinicians are encouraged to do the same. The most of syphilis cases are managed in departments of dermatovenerology. These facilities provide health care to patients with syphilis in line with syphilis mandatory measures. The Report on Sexually Transmitted Infections consists of demographic information, transmission and sexual contacts, mother-to-child transmission, serological and/or microscopic confirmation.

We used data from the National Health Information Center in the Slovak Republic, which collects and processes surveillance data from all geographical regions of the country (3, 4). The processing of statistical data was based on the Report on Sexually Transmitted Infections sent by the dermatovenerology departments

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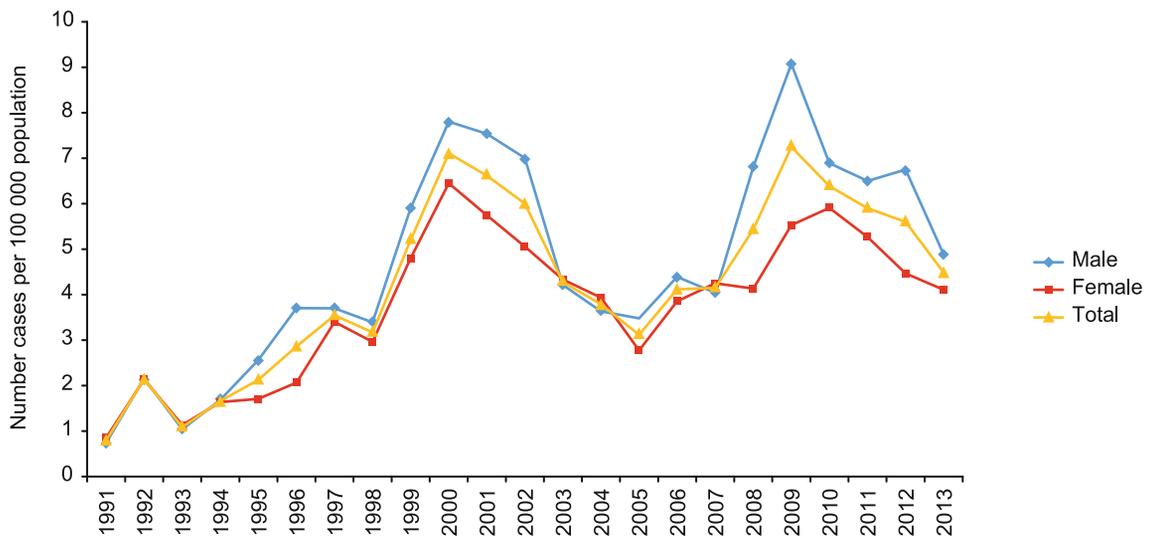


Fig. 1. Trend in number of reported syphilis cases per 100 000 population, 1991–2013.

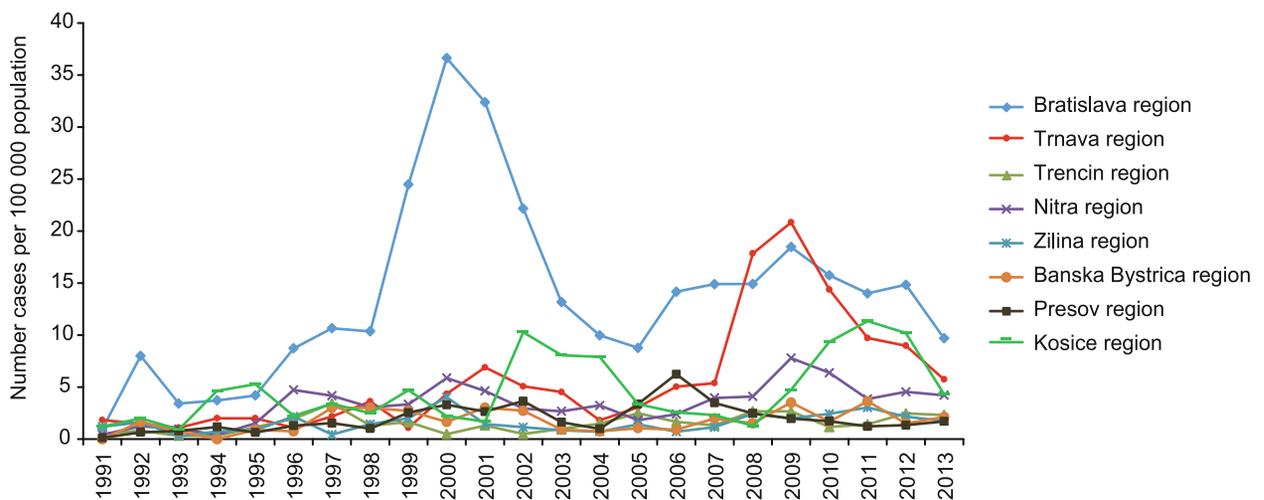


Fig. 2. Number of syphilis cases per 100 000 population in the Slovak Republic regions.

of health care providers and other health care providers coming into contact with syphilis.

The data were compiled electronically using the Excel program and analyzed using IBM SPSS Statistics 20 (Chicago, IL, USA). The annual rates were calculated per 100,000 population in the Slovak Republic and separately in all geographical regions of the country. The Eurostat database was used for the calculations.

Results

In the period from 1991 to 2013, 5012 cases of syphilis were reported in the Slovak Republic. The overall rate was 4.21 per 100 000 population. In the first decade (1991 to 2000), 1596 syphilis cases reported annually, in the second decade (2001 to 2010), 2546 syphilis cases and the last three years period (2011–2013), 870 syphilis cases reported annually in the Slovak Republic. Fig-

ure 1 shows the number of reported syphilis cases per 100 000 population with separate curves for male and female. The increasing trend during the first decade showed following syphilis cases: the number of syphilis cases increased from 42 in 1991 to 154 in 1996, the corresponding rate increased 262.5 % from 0.8 per 100 000 population to 2.9 over five years. Subsequently, the number of syphilis cases continue increasing from 154 in 1996 to 356 in 2001, the corresponding rate increased 127.6 % from 2.9 per 100 000 population to 6.6 over next 5 years. At the beginning of second decade decreased incidence was documented. The number of syphilis cases decreased from 356 in 2001 to 222 in 2006, the corresponding rate decreased 37.9 % from 6.6 per 100 000 population to 4.1 over the five years. New increasing documented the next 5-years period from 2006 to 2011, the number of syphilis cases increased from 222 in 2006 to 316 in 2011, the corresponding rate increased 43.9 % from 4.1 per 100 000 population to 5.9 over the

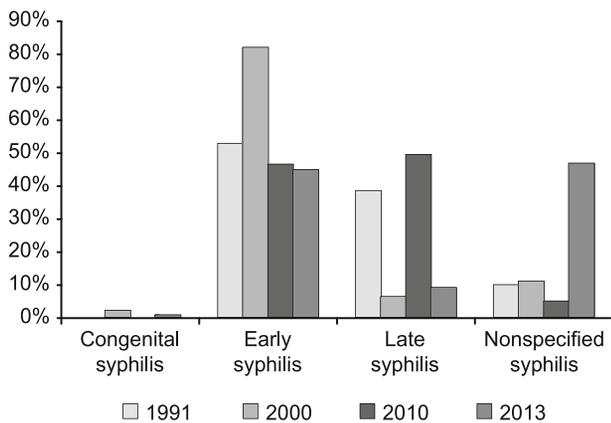


Fig. 3. Syphilis cases by stage of infection in the year 1991, 2000, 2010, 2013.

five year. Subsequently, the number of syphilis cases decreased from 316 in 2011 to 244 in 2013, the corresponding rate decreased 23.7 % from 5.9 per 100 000 population to 4.5 over the last three years. The different rates from various geographical regions in the country are shown in Figure 2. The highest rate 7.3 per 100 000 population was recorded in 2009 (9.1 per 100 000 men) and 36.36 per 100 000 population was recorded in Bratislava region in the year 2000. The second peak, 20.9 per 100 000 population, was evaluated in the Trnava region in 2009. Both regions are industrial territories with a dense population and high migration of inhabitants. The rate of other geographical regions of the country fluctuated between 0.3 and 9.3 per 100 000 population. These regions are less populated within small municipalities. Despite this close epidemic was reported inside marginalized social group in East regions of the country. From 2010 to 2013, 189 cases of acquired syphilis reported in Kosice region (specifically from Trebisov region) (4). The peak rate was reported 57.6 per 100 000 population in 2011. The rate decreased 29.7% in 2012, corresponding rate decreased from 57.6 per 100 000 population in 2011 to 40.7 in 2012, followed with 20.9 % decreasing in 2013, corresponding to 32.0 per 100 000 population (5).

Figure 3 shows syphilis cases by stage of infection in the year 1991, 2000, 2010 and 2013. The age group of 15–24 years was the largest, accounting for 45.2 % (19/42) of all cases in 1991. The age category of 25–34 years was the largest (37.5 %: 144/384; 36.9 %: 130/352; 25.4 %: 64/252) group in 2000, 2010 and 2013, respectively. The shift in age involvement is documented in 2013, the syphilis cases are distributed in all age groups, including young people (15–24 years 22.2 %; 56/252). The adults from 45 up to 65 years accounted 34.5 % (87/252). The male to female ratio was fluctuated from 0.8 to 1.7 (in 1996), corresponding the mode of heterosexual transmission which should be the most frequent (unfortunately the mode of sexual transmission is not reported in evaluated decades). Foreigners shared in average of 1.8 % (91/5012) of all cases with syphilis in reported period 1991–2013. In the first decade, foreigners were reported in 0.9 % (15/1596) of cases and in the second decade they partook in 8.8 %

(243/2761) of all cases. The last three years only 9 foreigners (1 %, 9/871) were reported.

Discussion

For the first time, the data from the Slovak Republic on syphilis for two decades, i.e. from 1991–2013, have been collected and evaluated. Syphilis case reporting is obligatory by law for all physicians in all settings. Despite this law, 90 % of syphilis cases overall were estimated to have been reported. A network of regional public health services was established in the former Czechoslovakia in 1925, and surveillance data of syphilis were collected from all geographical regions of the country from the year 1945 (6). The post-war period involved a campaign against venereal diseases, resulting in a decrease in the prevalence of syphilis. The general screening of all populations disclosed the majority of individuals afflicted with syphilis, who then underwent antibiotic treatment. The close borders had a positive influence on the epidemiology and spread of STIs, including syphilis. Meanwhile, this period with a closed society accompanied sporadic closed epidemics across the country. The situation was changed after the recent political and economic changes in the country (7). The increase in STIs, including syphilis was supported with the open borders, population migrations, expanding sex-work activities, and liberated sexual behavior of various age groups, although predominantly in young people. There is an evidence of syphilis increase rate in first five years accounting 262.5 % with continuing increase of 127.6 % in the next five years of the first decade. The highest rate 7.3 per 100 000 population was recorded in 2009 (9.1 per 100 000 men). This data present an alarm for public health. The highest incidence of 36.36 per 100 000 population was recorded in Bratislava region in the year 2000. This region has the highest concentration and migration of the population; it is also the highest sex-worker concentration and the most liberal sexual behaviors. Later, sporadic epidemic was disclosed in East region of the country inside marginalized social group in years 2010–2013; the peak rate was reported 57.6 per 100 000 population in 2011, followed with decrease 29.7 % and 20.9 % in 2012 and 2013 (4, 5). In the post-communist era, syphilis was also increasing in other central and East European countries, including Czech Republic (8). Moreover, the resurgence of syphilis in 2000 was recorded in West Europe, including France (9). The distribution of syphilis varied across countries, with rates from below 1 to 15 per 100 000 population. European countries indicated a 13 % decrease in the last two decades according to the data collected by the European Centre for Disease Prevention and Control (ECDC), which provides STI surveillance data from 30 countries of the European Union and European Economic Area (10). The interpretation of the overall trend is difficult as it is the result of diverging trends in different countries and strongly influenced by a number of countries that reported a high number of cases in the 1990s. Countries with very high rates of cases per 100 000 population in 1990s were Bulgaria, Estonia, Latvia and Romania. Trends peaked in 1995–1997 at rates of 125 per 100 000 population (Latvia) and 70 to 80 per 100 000 (Estonia) (2, 10). Denmark, Sweden, the United Kingdom and Spain possessed similar trends

with significantly lower rates which were declining or stable rates until 1999–2000. In 2000–2010, rates increased substantially in several countries including the Czech Republic, Denmark, Ireland, Spain, Sweden and United Kingdom. Rates in 2006–2010 showed different trends across countries including the Czech republic, Denmark, Finland, Greece, Malta, Slovak Republic, Slovenia and Spain documented increases in rates per 100 000 population, with the highest increases in the Czech Republic, Denmark, Slovak Republic, Slovenia and Malta. A decrease of more than 30% was documented in Estonia, Ireland, Latvia and Romania (10). These changes may reflect changes in healthcare systems or reporting systems rather than actual changes in prevalence of disease. The proportion of syphilis cases reported in men who have sex with men (MSM) varies across EU, with high proportions mainly documented in western and northern countries including France, Netherlands, Denmark, Norway, Ireland, and also in Slovenia and the Czech Republic (10). This may suggest that syphilis is largely transmitted among MSM in EU. In Belgium, 79.9 % of syphilis cases were MSM (11). In Germany, the incidence of syphilis in men was 10 times higher than in women, with MSM accounting for 75 % (12). Likewise, In France, MSM accounted for 75–87 % of syphilis cases, in Norway, 77 % of cases, and in Denmark, 65 % of cases (13, 14, 15). In the Slovak Republic syphilis also erupted in homosexual community in 1990s. The mode of transmission was not reported in the Slovak Republic, but men have higher rate across the two decades with a gender ration up to 1.9. The higher rate of syphilis in MSM could be masked with a higher incidence in sex worker women, and therefore the rate could be equilibrated. In Austria, more cases of syphilis reported among female (16). This may reflect the Austrian sentinel surveillance system that focuses more on sex workers than on any other risk population. (10). The approximately equal male-to-female ration reported in several countries may indicate a possible underreporting of cases in MSM or that many male cases could have been acquired through contact with sex workers.

In the past two decades, early syphilis was the most frequent stage of disease. The early stage of disease is an indicator of the spread of the infectious disease, including syphilis. Subsequently, late and unspecified syphilis also increased. Late syphilis and unspecified can account new undiscovered cases in their early stage which were recognized accidentally in screening or with developing signs and symptoms later after 3 or more years after being infected with *Treponema pallidum*. These data show that many cases with early syphilis evaded detection, were not treated for syphilitic infection and recovered accidentally due to screening with a serological examination performed for various reasons. Early syphilis is also the most frequent stage in Poland and other EU countries (2, 17, 18).

This epidemiologic study possesses some bias and wantage, as it does not evaluate the MSM transmission, partial inaccuracy in reporting of syphilis cases across the country and does not contain the trend of congenital syphilis. Evaluation of congenital syphilis in period of two decade is a subject of other publication. In general, the majority of countries including the Slovak Republic reported syphilis cases are obtained from dedicated special ser-

vices including STI clinics or Dept. of Dermatovenereology rather than general practitioners, suggesting that the actual number of reported cases may be underestimated. Furthermore, diagnosis of some syphilis cases is either not made or not reported, which severely limits the interpretation of the epidemiologic situation not only in the Slovak Republic, but also in other EU countries. The key populations at high risk in transmission of syphilis are sex-workers and MSM. They have great risk of exposure syphilis infection as well as HIV and other STIs. The preventive measures include promotion of condom use, and should also be offered regular testing for STIs, including syphilis testing (19, 20). Education about syphilis in the overall population, particularly in marginalized groups plays important role in elimination of syphilis infection. Specific messages should revolve around the recognition of syphilis symptoms and the need for medical consultation at the onset of disease symptoms.

Conclusion

Syphilis possessed an increasing trend over two decades and resulted in the assignment of the Slovak Republic as one of the European countries with a high trend of syphilis. In last three years (2011–2013) the trend is minimally decreasing. Evaluating the epidemiological situation in the country indicates a requirement for developing a comprehensive control program with educational campaigns in the overall population, particularly in marginalized groups, and improving case management by health providers.

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