Dynamics and structure of sexually transmitted infection (STI) incidence rate in the Republic of Kazakhstan

Biology and Medicine

Research Article

Volume 6, Issue 3, Article ID: BM-047-14, 2014
Indexed by Scopus (Elsevier)
Introduction

Currently urogenital infections are ubiquitous and represent one of the most urgent issues of modern dermatovenerology not only in Kazakhstan [1,2] but also in the countries of Eastern Europe [3-5] and the USA [6].

The end of the last century was marked by a transition period in the form of socio-economic reforms, which were accompanied by migration, unemployment, decrease in income, the so-called sexual revolution, reduction of healthcare financing. Socio-related diseases, including venereal diseases, are the result of the mentioned transformations.

According to the World Health Organization (WHO), every year an estimated 500 million people become ill with one of the four sexually transmitted infections (STIs): chlamydia, gonorrhea, syphilis, and trichomoniasis [7]. This basically takes into account only cases with complications and long-term consequences of STIs (infection of the upper genital tract infection, tubal infertility, chronic pain in the pelvic area, stillbirth, miscarriage, abortion, congenital infections, chronic recurrent genital symptoms, etc.). The number of asymptomatic STIs is unknown and underestimated, and, therefore, these cases serve as a reservoir contributing to transmission of these infections to sexual partners and...
newborns. In addition, the presence of genital infection increases the risk of HIV infection transmission [8-10].

In this regard, it is very important to control dynamics of STIs incidence and to analyze epidemiological situation of STIs.

Research objective is to study and evaluate structure and dynamics of STI incidence rate for the period between 2003 and 2013 in the territory of the Republic of Kazakhstan.

Materials and Methods

We have carried out a comprehensive study – a detailed analysis of the incidence of STIs over 10 yrs, in the context of individual nosology.

The official statistics and reports for the period between 2003 and 2013: Form #3 and #9 were used as materials for the study.

A retrospective analysis of STI incidence rate during 10-yrs period (2003-2013) in Kazakhstan was performed. Data on the incidence of some STIs were expressed in absolute values and per 100 thousand population, and in some series of observations the incidence of STIs was expressed per 100 thousand of relevant population.

Results and Discussion

According to studies, the total number of cases of STI in 2013 was – 33,325 (195.6 per 100 thousand population). In the total burden of disease, trichomoniasis ranks first (33.5%), syphilis is on the second place (18.2%), and chlamydia is on the third place (13.9%) (Figure 1).

So following the results it was found that number of patients with STIs is more than 5.0% of all registered patients of dermatovenereological profile, and dynamics of STI incidence in the country is characterized by trend toward decreasing over the past 10 yrs (Figure 2).

The highest incidence rates of STIs in excess of the similar republican indicator were registered in Akmola region (407.0 per thousand population).
Figure 3: STIs incidence rate in the regions of the RoK for 2013 (for 100 thousand population).

In terms of regions of the RoK (Figure 5): in 2013, the highest incidence rates of syphilis in excess of the similar republican indicator were registered in Kyzylorda region (95.2 per 100 thousand population), in the city of Astana (72.6), and Atyrau region (50.8); and the lowest rates were recorded in Mangistau region (6.8), Kostanai region (25.4), Aktobe region (20.3), and Pavlodar region (20.8).

Despite the visual, so-called qualitative similarity of trends in syphilis incidence between urban and rural areas of Kazakhstan (Figure 6), there are quantitative differences between the two components. Thus, the average incidence of syphilis among urban population (61.6 per 100 thousand population) in dynamics of 10 yrs is nearly 1.7 times higher than the same index in rural areas.
among rural population (36.0). But if we compare this difference with regard to incidence of syphilis between the starting point (2003) and the last dynamic series (2013), this difference is only 33.8 per 100 thousand population among rural population, and 56.5 per 100 thousand population among urban population.

Dynamics of congenital syphilis over a specified period of time has a trend toward reduction, except for 2009, when a sudden rise is marked – 30 reported cases (Figure 7). In 2013, the following regions made the main contribution to incidence of congenital syphilis: Atyrau region (6), South Kaakhstan region (3), Karaganda region (2 cases), Almaty region (2), Akmola region (2), the city of Astana (2).

It is also worth mentioning that in the last 5-7 yrs, cases of congenital syphilis were recorded mainly in the village among newborns (villages remoted even from regional centers, settlements).

Dynamics of syphilis incidence among pregnant women (Figure 8) had the trend toward reduction during the period between 2003 and 2013. So, the incidence rate of syphilis among pregnant women was 20.4 per 100 thousand women of childbearing age at the reference point, and it amounted to 11.5 by 2013.
It is known that in addition to the increasing number of cases of congenital syphilis and syphilis among pregnant women, growth of latent syphilis shall mean the assumed rise of syphilis incidence in the near future.

Table 1 shows dynamics of the incidence of various forms of syphilis in the Republic of Kazakhstan for a specified period of time.

It is well known that increase in the total incidence of syphilis is caused by increase in the incidence of manifest forms of early syphilis and, conversely, the proportion of latent and late syphilis in the structure of syphilis increases in interepidemic period. Since 2003, there has been an increased incidence of early latent (54.7 per 100 thousand population) and late (0.07 per 100 thousand population) syphilis. The foregoing suggests that patients are identified in the later stages.

One of the main and most important reasons for the growth of late syphilis (neurosyphilis, visceral syphilis) and early latent syphilis is development of the market of private healthcare services, where STI therapy is often inadequately implemented due to low-skilled medical staff, etc. The so-called core groups (commercial sex workers, injecting drug users, youth, prisoners, etc.) contribute to the incidence of latent syphilis. “Conservation” and accumulation of syphilis may take place in interepidemic period inside
such groups. Unfortunately, we should admit that there is no single strategy for interaction between the services (dermatovenerological service, HLS, AIDS), responsible for timely and adequate preventive measures.

Gonorrhea

The 10-yr dynamics of gonorrhea incidence in the RoK is characterized by interchange of phases of growth and reduction, respectively, which followed one after the other (Figure 9). The peak incidence was registered in 2004 (76.2 per 100 thousand) and in 2008 the average incidence was 49.4 per 100 thousand population.

As with syphilis there were no qualitative differences between curves of republican, urban and rural incidence of gonorrhea in the dynamics of over 10 yrs. In all three cases the curves were nearly parallel to each other (Figure 10).

However, when comparing three series of changes in incidence over time significant differences ($p < 0.05$) were found between each of the specified curves. Thus, the average incidence of gonorrhea over a specified period of time among the urban residents was 73.7 per 100 thousand urban population against 49.5 per 100 thousand general population and 19.3 per 100 thousand rural population.

In terms of regions of the RoK (Figure 11): in 2013, the highest rates of gonorrhea incidence in excess of the similar republican index, have been reported in East Kazakhstan region (73.3 per 100 thousand population), Pavlodar region (75.0), and Akmola region (39.8), while the lowest incidence rate was recorded in Karaganda region (10.3) and the city of Almaty (10.9).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Early syphilis (primary, secondary)</td>
<td>36.5</td>
<td>24.5</td>
<td>18.5</td>
<td>17.3</td>
<td>14.2</td>
<td>12.1</td>
<td>11.7</td>
<td>9.8</td>
<td>10.4</td>
<td>12.5</td>
<td>13.9</td>
</tr>
<tr>
<td>Early latent syphilis</td>
<td>54.7</td>
<td>53.9</td>
<td>41.9</td>
<td>35.5</td>
<td>31.5</td>
<td>28.6</td>
<td>26.9</td>
<td>24.6</td>
<td>22.0</td>
<td>23.7</td>
<td>21.6</td>
</tr>
<tr>
<td>Late syphilis</td>
<td>0.07</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
<td>0.1</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Other unspecified forms</td>
<td>0.4</td>
<td>0.3</td>
<td>0.2</td>
<td>0.1</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>All forms</td>
<td>92.1</td>
<td>79.3</td>
<td>60.9</td>
<td>53.2</td>
<td>46.0</td>
<td>40.9</td>
<td>40.0</td>
<td>34.5</td>
<td>33.0</td>
<td>36.6</td>
<td>35.6</td>
</tr>
</tbody>
</table>

Figure 9: Dynamics of gonorrhea incidence in the RoK for the period between 2003 and 2012 per 100 thousand population.
**Other STIs**

During the period of 2003-2013, dynamics of morbidity with urogenital chlamydiosis has been characterized by a tendency toward decrease (Figure 12). The peak incidence of urogenital chlamydiosis in a specified time interval was in 2005 and amounted to 46.9 per 100 thousand population. A similar curve was typical for incidence of urogenital trichomoniasis, with peak incidence in 2004 and amounting to 235.1 per 100 thousand population.

In 2013, incidence rates of sexually transmitted diseases amounted to 27.1 (chlamydia) and 65.5 (trichomoniasis) per 100 thousand population, respectively.
Conclusion

A favorable downward trend in the incidence of sexually transmitted infections has been marked in the Republic of Kazakhstan for more than 10-yrs period. However, the trend toward increase in the incidence of syphilis (in particular congenital syphilis) in the last 2-3 yrs requires efforts to be made with regard to anti-epidemic measures and full coordination between dermatovenereologic and obstetric services of the RoK.

References


7. Sexually Transmitted Infections (STIs) Newsletter #110. (Date Views 21.08.2014, http://www.who.int/mediacentre/factsheets/fs110/ru/).

