Characteristics of the incidence and prevalence of chronic cystitis among the male population in Ukraine

N. O. Saidakova1, V. P. Stus2, N. V. Havva2
1Institute of Urology of the National Academy of Medical Sciences of Ukraine, Kiev
2Dniprovsky State Medical University

The work is devoted to the dynamics of morbidity and prevalence of chronic cystitis among the male population of Ukraine for 10 years (2008–2017). The primary documents were the reported forms of official statistics. The special feature of the study was a comparative analysis of two periods of five-years. The approach was justified by the possibility to trace the nature and intensity of changes, and was also of interest in terms of known territorial changes in the country.

It was found that among the total number of registered as well as first-time patients with chronic cystitis in Ukraine, a quarter of them were men. Over the years there has been a decrease in the number of cases. At the same time its rate among the latter is lower than among those registered, which is more pronounced in the last five years. This finding may suggest that the situation is likely to change in the near future towards an increase in the number of cases among men.

The first three places in the number of men with chronic cystitis are occupied by the Southeastern, Western, Southern regions. The incidence and prevalence rates (per 100,000) among men are half as high as the corresponding rates among the adult population as a whole. The values of the latter have been decreasing over the years, while the incidence rate increased between 2013 and 2017. Each region has its own peculiarities, which are manifested both by the levels of width in the regions which make up their structure and by the nature of their dynamics. The first identified men with CC usually accounted for one quarter of the total number of cases. Each region is distinguished by the number of first-time offenders. The situation in Ukraine is defined by the Southeastern, Southern regions and Kiev, where the rates are higher than the Ukrainian average and are increasing.

Keywords: male population, chronic cystitis, incidence, prevalence.

Особливості захворюваності та поширеності хронічного циститу серед чоловічого населення України

N. O. Сайдакова, В. П. Стусь, Н. В. Гавва

У статті представлена динаміка захворюваності та поширеності хронічного циститу (ХЦ) серед чоловічого населення України за 10 років (2008–2017 р.). Первинними документами були звітні форми офіційної статистики. Особливістю вивчення було відображення двох періодів по п’ять років кожний, що дозволяло простежити характер змін, а також представляло інтерес з огляду на відомі територіальні зміни в країні.

Встановлено, що як серед загальної кількості зареєстрованих, так і серед виявлених уперше хворих на ХЦ в Україні, чверть з них припадає на чоловіків. З роками спостерігається їх зменшення. Водночас темп ХЦ серед чоловіків поступається кількості зареєстрованих, які взяли на облік, що більшою мірою проявляється в останні п’ять років. Це свідчить про імовірність зміни ситуації в найближчий період у бік збільшення випадків захворювання серед чоловіків.

У структурі розподілу хворих перші місця за кількістю чоловіків з ХЦ посіли Південно-Східний, Західний, Південний регіони. Рівні поширеності та захворюваності (на 100 тис. населення) серед чоловіків удвічі менші, ніж такі самі показники серед усього населення. Слід зазначити, що захворюваність на ХЦ зросла за 2013–2017 роки. Кожному регіону притаманні свої особливості, що проявляються як рівнями поширеності в областях, що входять до їхнього складу, так і характером їхньої динаміки. Щорічно на вперше виявлених хворих, хворих на ХЦ, припадала одна чверть від їхньої загальної кількості. У кожному регіоні виділяють області за кількістю хворих, що вперше захворіли.

Ключові слова: хвороба, захворюваність, поширеність.

Особенности заболеваемости и распространенности хронического цистита среди мужского населения Украины

Н.А. Сайдакова, В.П. Стусь, Н.В. Гавва

Статья посвящена динамике заболеваемости и распространенности хронического цистита (ХЦ) среди мужского населения Украины за 10 лет (2008–2017 г.). Первоочередными документами были данные официальной статистики. Особенностью изучения было проведение сравнительного анализа за два пятилетних периода, что позволило проследить характер и интенсивность изменений, а также представить интерес в плане известных территориальных изменений в стране.

Одновременно, что как среди всего количества зарегистрированных, так и у впервые выявленных больных ХЦ в Украине, четверть из них приходится на мужчин. С годами наблюдается их уменьшение. При этом темп ХЦ среди мужчин уступает количеству зарегистрированных, которые взяты на учет, что в большей степени проявилось в последние пять лет. Это свидетельствует о вероятности изменения ситуации в ближайшее время в сторону увеличения случаев заболевания среди мужчин.

В структуре распределения больных первые места по количеству мужчин с хроническим циститом занимают Юго-Восточный, Западный, Южный регионы. Уровни заболеваемости и распространенности (на 100 тыс. населения) среди мужчин в два раза меньше, чем соответствующие показатели среди всего взрослого населения. Следует заметить, что заболеваемость ХЦ увеличилась за период 2013–2017 г. Каждому региону присущи свои особенности, проявляющиеся как уровнями распространенности в областях, входящих в их состав, так и характером их динамики. Ежегодно на впервые выявленных мужчин болезню приходилась одна четверть от их общего количества.

В каждом регионе выделяют области по количеству впервые заболевших мужчин. Ситуация в Украине определяется Юго-Восточным, Южным регионами и г. Киевом, где показатели выше среднероссийских и продолжают увеличиваться.

Ключевые слова: мужское население, хронический цистит, заболеваемость, распространенность.
I

nfections of the urinary tract are among the problems that do not become less topical over the years. This is due to its difficulty in treating and the threat to patients in terms of the nature of the pathology’s survival with a tendency to relapse, associated with a decrease in physical, psycho-motivational activity up to the loss of employment [1, 2]. At the same time the number of publications devoted to an in-depth understanding of the pathogenesis of infectious and flammable diseases taking into account the state is increasing, their diagnosis and, in particular, their treatment, taking into account that urological infections are always potentially contagious with possible transmission of drug-resistant pathogenesis [3, 4].

At the same time, universal attention to different aspects of problematic issues cannot but have a positive impact on improving the quality of medical care, as authoritarians point out [5, 6]. This is particularly true for chronic cystitis (CC). According to information resources, practical urology has been for a long time preoccupied with possible transmission of drug-resistant pathogenesis [3, 4].

The objective: of the work was to conduct a trend analysis of the incidence and prevalence of chronic cystitis in the male population of Ukraine.

MATERIALS AND METHODS

The primary documents were the reporting forms of official statistics (F.F. № 7 and № 47) for 2008–2017. When analyzing the indicators of the incidence and prevalence of chronic cystitis among the male population of Ukraine, two periods (2008–2012 and 2013–2017) were distinguished. They were of interest in the comparative aspect both in terms of the well-known territorial variability of the data resulted in determination of average values for the study periods which clearly indicate the nature of regional changes (Table 2).

The research was conducted in the context of all regions of Ukraine, taking into account the regions included in their structure. Absolute values and special coefficients per 100,000 inhabitants were studied. The statistical analysis of the obtained data used standard methods of evaluation of variation series (absolute increase or decrease, the rate of increase or decrease), if necessary, to bring the differences between the two statistical groups used Student’s criterion.

RESULTS AND THEIR DISCUSSION

The 10-year (2008–2017) analysis of chronic cystitis patients registered in Ukraine showed their increase by 0.4% up to 65239 in 2017. The process was ambiguous in two periods: the first (2008–2012) saw a net increase (by 3.6%), the second a decrease (by 3.7%). While the number of such patients was low by the year, one quarter of them were men (Fig. 1), the regional distribution of these patients is shown in Table 1. One of the conclusions from Table 1 is that the first three places in the structural distribution were located in the Southeastern, Western and Eastern regions. The next – in a steady decrease of the said contingent, intensified over the years: in the whole of Ukraine for 10 years by 9.7% to 14,149 in 2017, for periods by 3.8% and 8.8% respectively. This process was driven by the Western, Eastern and Northern regions and the capital in the first five years, which were joined by the Central and Eastern regions in the next five years.

The leading region for the number of men with CC is consistently the Southeastern region (33.4–42.3%), and the last one is the Northeastern region (4.0–10.0%). The significant variability of the data resulted in determination of average values for the study periods which clearly indicate the nature of regional changes (Table 2).

According to Table 2, it was confirmed that in each region, with the exception of the Eastern region, during 2013–2017, the number of registered men with CC was significantly lower than in 2008–2012. Kyiv, where the number of first-time cases of CC in men is the same as in the Central and Western regions. Analyses by region revealed that 56% (9284 out of 16562) in 2008 and 61.3% (9162 out of 14949) in 2017 were in 10 regions. Ten of them, namely Ivano-Frankivsk, Lviv, Chernivtsi in the Western region; Zhytomyr, Kyiv, Cherniaki in the Central region; Poltava in the Northeastern region; Dnipropetrovsk, Kharkiv in the Southeastern and Odessa in the Southern region.

The prevalence of CC among the adult population of Ukraine (per 100,000 people) increased to 187.5 in 2017 compared to 171.5 in 2008. Among the male population, the rate was twice as low – 95.1 versus 97.3, respectively, and it appears to have decreased (by 2.3%). The analysis shows its non-stability in Ukraine and its administrative territories. During the first twenty years it decreased, the rate of increase or decrease, if necessary, to bring the differences between the two statistical groups used Student’s criterion.

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fluctuated from 78.8 to 137.5, the second – from 87.3 to 103.0. To assess regional indicators, their average values were calculated for the periods presented in Table 3.

In comparative terms, the Ukrainian average (102.7±8.8 and 94.1±2.4) is higher than the average for Ukraine, which in fact shapes the situation on the whole, the most distinctive feature of the region is the Southeastern, the Southern regions and the capital city which, incidentally, demonstrate an increase in their rates with the same level in the Southern, in Kyiv they are twice as high as in Central Ukraine.

Each region has its own peculiarities, which are manifested both by the levels of width in the regions which make up their structure and by the nature of their dynamics. Thus, the first sign in the West is Chernivtsi region, where indices are two times higher than in other regions (190.0±20.7 and 155.1±3.4 for each period), but in Ivano-Frankiv and Ternopil the indicators increased significantly (from 63.9±4.6 to 76.9±3.2 and from 72.0±5.3 to 94.5±1.7 respectively).

In the Central region – Zhytomyr with values 97.7±10.2 and 101.3±2.9 (p>0.05). The Dnipropetrovsk region (212.0±7.4 and 219.4±11.2) and Kharkiv, with a significant increase from 120.3±10.0 to 201.3±12.2 in the second period. In the Southern region, the main focus was on the Mykolayiv region (150.1±19.5 and 248.2±29.8; p<0.05) and Odessa region (180.0±2.4 and 109.2±1.6; p<0.05).

Thus the prevalence of CC among the adult population is almost twice as low as among the adult population in Ukraine and tends to decrease. The highest indicators were found to be in the Southeastern, Southern regions and Kyiv, the first two show their growth. The intra-regional peculiarities are of importance in the form of the defined regions, which form the spread both in the given region and in Ukraine (Chernivtsi, Zhytomyr, Dnipropetrovsk, Kharkiv, Mykolayiv, Odessa).

The first identified men with CC usually accounted for one quarter of the total number of cases. In 2008, a total of 14,703 such cases were reported in Ukraine, of which 3,952 were men (26.2%).

### Table 2

| Regions    | I period       | II period      |
|------------|----------------|----------------|
| Western    | 2822±58.6      | 2264±47.6*     |
| Central    | 2199±59.8      | 2052±47.8*     |
| Northeastern | 939±92.0      | 747±56.0*      |
| Southeastern | 6408±137     | 5769±155*      |
| Southern   | 1707±103       | 2347±148*      |
| Kyiv       | 2474±177       | 2158±131       |
| Ukraine    | 16670±312      | 15390±444*     |

**Note.** * – Differences are valid between periods; p<0.05.

### Table 3

| Regions    | I period       | II period      |
|------------|----------------|----------------|
| Western    | 78.0±6.5       | 74.2±1.2       |
| Central    | 83.2±4.3       | 79.4±1.4       |
| Northeastern | 55.5±9.9      | 54.4±4.7       |
| Southeastern | 95.8±5.0      | 100.8±3.3      |
| Southern   | 95.0±6.7       | 144.1±8.3*     |
| Kyiv       | 228.7±12.2     | 205.9±12.7     |
| Ukraine    | 102.7±8.8      | 94.1±2.4       |

**Note.** * – Differences are valid between periods; p<0.05.
The number of patients with chronic cystitis (CC) and cases with newly diagnosed disease in Ukraine increased in 10 years (2008–2017) and decreased in number of males, with a stable quarter of them. The rate among the latter is inferior to the rate among the number of registered, which has been more pronounced over the past five years (by 1.7% vs. 6% in the previous year).

The average number of cases in Ukraine was 14447±158 and 14819±99 (p<0,05), of males 5118±960 and 3707±130 patients respectively. Therefore, in 10 years (by 2013–2017) by 5.6% with a decrease in the number of patients, the number of males among them is decreasing. With all fluctuations of the data over the years, the above is true for all regions, except for Southern and Kyiv, which is shown in Table 4. The same is true for the averaged values presented in Table 5.

The first three places in the contingent distribution structure belonged to the Southeastern, Western and Southern regions.

Each region is distinguished by the number of first-time offenders. These are matched by those with the highest number of cases. Namely Ivano-Frankivsk region (23.2 and 27.0), Ternopil region (21.4 and 30.6), Chernivtsi region (49.2 and 44.7) in the Western region; Zhytomyr region (22.5 and 31.4), Cherkasy region (30.7 and 23.5) in the Central region; Dnipropetrovsk (62.0 and 53.7) for the Southeastern region; Mykolaivska (9.1 and 107.2), Khersonka (20.8 and 147.0) for the Southern region.

It is worth noting that the rate of decline in first-time occurrences of CC is lower than the rate of decline in the number of cases reported, which has been more pronounced over the past five years. This is alarming as it can be interpreted as already showing a willingness to change the situation in the coming years towards an increase in CC among the male population.

### Table 4

| Regions      | I (2008–2012) | II (2013–2017) |
|--------------|---------------|----------------|
| Western      | 772±72        | 656±72         |
| Central      | 19,5±71       | 17,1±71        |
| Southeastern | 535±73        | 458±73         |
| Southern     | 210±70        | 180±70         |
| Kyiv         | 202±71        | 100±70         |
| Ukraine      | 3952±700      | 3828±700       |

Note. * – Difference is valid between the indicators for the periods; p<0,05.

2017, 151112 and 3817 (25.2%) respectively. Therefore, in 10 years there was a decrease by 3.4% with the consolidation of the process over the last five years (by 1.7% vs. 6% in the previous year).

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Thus, with the annual decrease in the number of men with newly diagnosed CC in Ukraine, the largest number of them are concentrated in the Southeastern, Western, and Eastern regions. The incidence rate (per 100,000 people) increased over the last five years (2013–2017) by 5.6% to 24.3. The areas identified in each region that influence the situation there and, in turn, the regions that shape it in Ukraine.

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### Table 5

| Regions      | I (2008–2012) | II (2013–2017) |
|--------------|---------------|----------------|
| Western      | 147112±70000  | 151112±70000   |
| Central      | 1468±70000    | 138±70000      |
| Southeastern | 1212±70000    | 100±70000      |
| Southern     | 857±70000     | 728±70000      |
| Kyiv         | 372±70000     | 3828±70000     |
| Ukraine      | 1818±70000    | 1818±70000     |

Note. * – Difference is valid between the indicators for the periods; p<0,05.

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### CONCLUSIONS

1. The number of patients with chronic cystitis (CC) and cases with newly diagnosed disease in Ukraine increased in 10 years (2008–2017) and decreased in number of males, with a stable quarter of them. The rate among the latter is inferior to the rate among the number of registered, which has been
more pronounced in the last five years and is worrisome in terms of the likelihood of an increase in CC in this category in the near future. In the structure of their distribution, the first place belongs to the Southeastern, Western and Southern regions. The areas for which the overall situation is shaped are identified.

2. The prevalence and incidence of chronic diseases of CC in males is found to be twice as low as in the adult Ukrainian population. With their decrease over the years, only the incidence of disease increased in 2013–2017. Regional peculiarities were manifested by an increase in the relevant data in the Southeastern, Southern regions and Kyiv.

REFERENCES
1. EAU Guidelines on urological infection. Ed. By Pickard R, Bonkor G, Bartokletti R, et al. Eur Urol. 2017;97(6):1099-1109.
2. Ignashov YuA, Kuzmin IV, Slesarevs-kaya MN. Sindrom boleznennogo mo-chevogo puzyrya: istoricheskiye aspekty [Urologicheskiye vedomosti. Painful bladder syndrome: historical aspects]. Urological statements. 2016;6(3):5-10. Doi:10.17816/uroved635-10
3. Kulchevenya EV. Novyy pokhod k ponimaniu patogeneza i k lecheniyu infektsionno-vospalitelnykh zabolavaniy mochepevolyoy sistemy. Urologiya [A new approach to understanding the pathogenesis and treatment of infectious and inflammatory diseases of the genitourinary system]. Urology. 2020;5:99-105.
4. Mc Leilian LK, Hunstad DA. Urinary Tract Infection: Pathogenesis and Out-look. Trends Mol Med. 2016;22(11):946-57. Doi. 10.1016/j.molmed.2016.09.003
5. Ivanov DD, Dombrovsky YaA. Prim-eniyu preparatov gialuronovoy kis-lovy v terapii khronicheskogo tsistita. Novosti meditsiny i farmatsii [The use of hyaluronic acid preparations in the treatment of chronic cystitis]. News of medicine and pharmacy. 2015;8:8-10.
6. Wagenleheer F. Urogenital infec-tion. World. J Urol. 2020;38(1):1-2. Doi 10.1007/s00345-019-03039-4
7. Kuzmenko AV, Kuzmenko W, Gyaur-giev TA. Sovremennye tendentsii v lech-eniy khronicheskogo retsidiviruyushchego bakterial’nogo tsistita [Current trends in the treatment of chronic recurrent bacte-rial cystitis]. Urology. 2020;6:52-8.
8. Perepanova TS, Merinov DS, Kazach-enko AV, Khazan PL, Malova YuA. Bak-teriofagoterapiya urologicheskoj infektsii [Bacteriophage therapy of urological infection]. Urology. 2020;5:106-14.

Information about the author

Saidakova Natalia O. – Institute of Urology of the National Academy of Medical Sciences of Ukraine, 04053, Kyiv, 9 a V. Vynnychenko Str. E-mail: natalihavva@gmail.com
https://orcid.org/0000-0002-7174-9540
Stus Viktor P. – Dniprovsky State Medical University, 49044, Dnipro, 9 Volodymyr Vernadskyi Str.
https://orcid.org/0000-0002-4539-8126
Havva Natalia V. – Dniprovsky State Medical University, 49044, Dnipro, 9 Volodymyr Vernadskyi Str.
https://orcid.org/0000-0001-6986-0920

Відомості про авторів

Сайдакова Наталія Олександрівна – Інститут урології національної академії медичних наук України, 04053, м. Київ, вул. В. Винниченка, 9а. E-mail: natalihavva@gmail.com
https://orcid.org/0000-0002-7174-9540
Стусь Віктор Петрович – Дніпровський державний медичний університет, 49044, м. Дніпро, вул. Володимира Вернадського, 9
https://orcid.org/0000-0002-4539-8126
Гавва Наталія Володимирівна – Дніпровський державний медичний університет, 49044, м. Дніпро, вул. Володимира Вернадського, 9
https://orcid.org/0000-0001-6986-0920

Сведения об авторах

Сайдакова Наталья Александровна – Институт урологии национальной академии медицинских наук Украины, 04053, г. Киев, ул. В. Винниченка, 9а. E-mail: natalihavva@gmail.com
https://orcid.org/0000-0002-7174-9540
Стусь Виктор Петрович – Днепровский государственный медицинский университет, 49044, г. Днепр, ул. Владимира Вернадского, 9
https://orcid.org/0000-0002-4539-8126
Гавва Наталья Владимировна – Днепровский государственный медицинский университет, 49044, г. Днепр, ул. Владимира Вернадского, 9
https://orcid.org/0000-0001-6986-0920

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