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СОЦИАЛЬНЫЕ АСПЕКТЫ СМЕРТНОСТИ НАСЕЛЕНИЯ ОТ ЗЛОКАЧЕСТВЕННЫХ НОВООБРАЗОВАНИЙ МОЧЕПОЛОВОЙ СФЕРЫ

Аннотация: В работе были определены основные закономерности динамики смертности от отдельных злокачественных новообразований (ЗНО) мочеполовой сферы. В исследовании были использованы данные специализированных отчётных форм №7 «Сведения о заболеваниях злокачественными новообразованиями» и №35 «Сведения о больных злокачественными новообразованиями» Челябинской области за 2008-2016 годы, а также официальных сборников онкологической службы Челябинской области. Было установлено, что Челябинская область отличается высоким уровнем и негативной динамикой смертности от ЗНО мочеполовых органов

в сравнении с общероссийскими показателями. Летальность на первом году после установления диагноза находится в сильной прямой зависимости от частоты выявления поздних стадий опухолевого процесса.

Ключевые слова: *смертность, злокачественные новообразования, мочеполовая сфера, Челябинская область.*

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SOCIAL ASPECTS OF POPULATION MORTALITY DUE TO MALIGNANT TUMOURS OF URINOGENITAL SPHERE

Annotation: *In this paper the main principles of mortality dynamics due to separate malignant tumours (MTs) of urinogenital sphere are considered. During the research we have used the data of specialized reporting forms #7 'Information of cases of malignant tumours' and #35 'Information of patients with malignant tumours' in the Chelyabinsk region for 2008-2016, and also official collections of the oncologic service of the Chelyabinsk region. It has been found out that the Chelyabinsk region has the higher level and negative mortality dynamics due to*

malignant tumours of urinogenital organs in comparisons with nationwide indices. The mortality during the first year after making a diagnosis strongly and directly depends on the frequency of detecting the advanced stages of the neoplastic process.

Keywords: *mortality, malignant tumours, urinogenital system, Chelyabinsk region.*

Introduction. From the point of view of evaluating the health status of the male population, malignant tumours (MTs) have been the biggest problem of European countries and Russia for many years. Their proportion is practically every fifth case of death and disability of men, and 5.3% – of temporary incapacity. Moreover, in leading countries of the European Union and Japan the rate of mortality due to MTs of urinogenital system of men has decreased from 27.2 to 19.0 cases for 100,000 of the male population. Whereas in the Russian Federation it has increased up to 29.9 cases for 100,000 of population [4,5].

Compared to the European Union and the USA, where the development and the implementation of nationwide programmes of preventing the malignant tumours have led to the decrease of mortality, which is connected with them, in Russia the absolute indices are continuing to grow and they exceed the analogous data of developed countries in Europe, Japan and North America for separate nosological entities twice. The mortality of men due to MTs of the prostate gland has increased from 12.9 to 16.7 cases for 100,000 of the population, from MTs of kidneys – from 7.4 to 7.8, respectively. As a result, the duration of life of Russian men, according to the information of WHO, is 61.2 years which is less than in economically developed European countries by 10-15 years [1].

Goal of research. To determine the main principles of mortality dynamics due to separate malignant tumours of male urinogenital system.

Materials and methods

During the research we have used the data of specialized reporting forms #7 ‘Information of cases of malignant tumours’ and #35 ‘Information of patients with

malignant tumours' in the Chelyabinsk region for 2008-2016, and also official collections of the oncologic service of the Chelyabinsk region [2]. When processing the data, the non-parametric methods of statistical analysis have been used. In order to determine the statistical significance of differences or similarities of indices of compared groups we have employed the single-factor analysis of variance with the help of calculating the F-test (F). If the value of $F_{\text{быч}}$ is less than the critical value of $F_{\text{кр}}$, then the null hypothesis is accepted: there are no differences between compared classes. If $F_{\text{быч}}$ is more than the table value of $F_{\text{кр}}$, then there are differences between classes and they are considered statistically significant. In order to understand the occasionality or the significance of changes in morbidity levels for different years of research, we have used the iteration criterion (Z). If the received value of Z is equal to or more than the critical table value of $Z_{0.05}$, then the changes of the morbidity level are considered statistically insignificant: indices are located within the limits of random fluctuations. If Z is less than the table value of $Z_{0.05}$, then the differences are considered statistically significant: the existence of a certain dynamics of indices is confirmed [3]. The degree of interrelation of factors has been determined with the help of the correlation coefficient according to the Pearson method.

Results and discussion

In course of research it has been found out that the mortality level of men due to MTs of urinogential organs in the Chelyabinsk region on the whole has a clear tendency to increase ($Z > Z_{0.05}$): from 32.6 cases for 100,000 of male population in 2008 to 42.3 cases in 2016. In this case, this index weakly correlates ($r = +0.25 \pm 0.009$) with the mortality dynamics due to the cancer of urinogenital system of men in the Russian Federation on the whole and it sufficiently exceeds ($F > F_{\text{кр}}$ when $p < 0.05$) the nationwide data. The growth rate of mortality in the Chelyabinsk region is 129.8% for the previous nine years.

The comparative analysis of mortality due to MTs of separate organs of the urinogenital system has shown the fundamental differences in dynamics and level of indices.

The total negative tendency of mortality growth due to the cancer of the urinogenital system of men is explained only with the mortality growth due to tumours of the prostate gland and kidneys. During all years of research the highest level of mortality has been due to MTs of the prostate gland. In the Chelyabinsk region on the whole the mortality due to this nosological form has a clear tendency to grow ($Z > Z_{05}$): from 13.3 cases for 100,000 of male population in 2008 to 18.3 cases in 2016, and, when correlating ($r = +0.7 \pm 0.009$) with the nationwide mortality dynamics due to MTs of the prostate gland, it sufficiently exceeds its level ($F > F_{кр}$ when $p < 0,05$). The growth rate of this index in the Chelyabinsk region is 137.6% for the previous nine years. The dynamics of mortality growth because of this pathology has a direct strong correlative relationship ($r = +0.98 \pm 0.009$) with its morbidity growth.

In terms of the mortality level, the next is MTs of kidneys. The mortality due to this nosological form has significantly increased statistically ($Z > Z_{05}$): from 7.2 cases for 100,000 of male population in 2008 to 13.7 cases in 2016. The dynamics of changing the mortality level due to MTs of kidneys for men in the Chelyabinsk region weakly correlates ($r = +0.3 \pm 0.009$) with the dynamics of nationwide indices. It is caused by existence of sharp decreases in morbidity to 3.3 cases for 100,000 of male population and the same sharp increase up to 13.0 cases during the period of research. During first three years of research the indices of the Chelyabinsk region were lower than the nationwide ones, but then they started to grow and reached the statistically significant difference ($F > F_{кр}$ when $p < 0,05$) and even exceeded them. The growth rate of mortality due to renal cell carcinoma in the Chelyabinsk region 190.3% for the previous nine years. The dynamics of the mortality growth because of this pathology has a direct strong correlative relationship ($r = +0.85 \pm 0.009$) with its morbidity growth.

The third place in terms of the mortality level of men due to MTs of urinogenital organs is the bladder cancer. This index was undergoing serious fluctuations during separate years of research but on the whole it had the tendency

to decrease ($Z > Z_{05}$): from 12.9 cases for 100,000 of male population in 2011 to 9.4 cases in 2016.

The dynamics of the regional index has a direct weak correlation ($r=0.3 \pm 0.009$) with the dynamics of nationwide data, which are characterized with even but slow decrease. The decrease rate of mortality due to MTs of the bladder in the Chelyabinsk region is 38.0% for the previous nine years.

The fourth place in terms of mortality of men due to the cancer of urinogenital organs is taken by the collective group, which is combined under the heading 'Other genital organs' and which includes testicles and penis. The mortality due to MTs of these organs is very low and the fluctuations of its level are within the limits of statistical errors. On the whole, the regional parameter does not have significant differences ($F < F_{кр}$) from the nationwide one.

The important aspect of analyzing the mortality because of cancer is the research of fatal cases of oncologic patients during the year after establishing the diagnosis of a MT. On the basis of the dynamics during the first year it is possible to evaluate two things. First, the level of neglecting the neoplastic process and, secondly, the effectiveness of fulfilled treatment of oncologic patients.

The highest level of mortality of men during the first year after establishing the diagnosis, which sufficiently exceeds ($F > F_{кр}$ when $p < 0.05$) this parameter in case of MTs of other organs of the urinogenital system, belongs to the bladder tumours. In case of this localization of cancer, the average level of mortality for the period of research has been 22.8 cases for 100 patients with the diagnosis, which has been determined for the first time in their life. Despite the fact that during certain years this parameter was undergoing significant occasional fluctuations from 30.4 to 18.7 cases for 100 patients with the diagnosis, which has been determined for the first time in their life, but during the last year of research it returned to the value of the first year.

In case of kidney cancer, on the average during the period of research every fifth patient dies during the first year after establishing the diagnosis – 19.7 cases

for 100 patients with the diagnosis, which has been determined for the first time in their life. During certain years of research the mortality level was undergoing significant occasional fluctuations from 21.0 to 17.6 cases for 100 patients with the diagnosis, which has been determined for the first time in their life. However, during the first and the last years of our research it had approximately the same value. In case of MTs of kidneys the situation with mortality during the first year is credibly better than in case of MTs of the bladder, but also credibly ($F > F_{кр}$ when $p < 0.05$) worse than in case of MTs of the prostate gland. The average level of mortality because of the prostate cancer for the period of research has been 13.4 cases for 100 patients with the diagnosis, which has been determined for the first time in their life. Moreover, this is the only tumour among all MTs of the male urinogenital system, which has the positive dynamics during the period of research. For this localization, during the first year after establishing the diagnosis the mortality level credibly decreased ($Z > Z_{05}$) more than twice: from 18.9 cases for 100 patients with the diagnosis, which has been determined for the first time in their life, in 2008 to 8.6 cases in 2016.

The mortality during the first year after establishing the diagnosis of MTs of edeas has not been registered even once for the whole nine-year period of research and that can confirm the efficiency of curative treatment in case of low detectability of advanced forms of cancer.

The important issue is the study of circumstances which influence the mortality of patients with MTs of the urinogenital system during the first year after establishing the diagnosis. When studying this issue it has been found out that the proportion of persons during the first year after establishing the diagnosis of MTs of the prostate gland is strongly inversely dependent on the frequency of detecting the incipient stage of MTs ($r = -0.77 \pm 0.009$), and also the mortality is strongly directly dependent on the frequency of detecting the third stage ($r = 0.73 \pm 0.009$) and the fourth stage of the disease ($r = 0.7 \pm 0.009$), i.e., the more frequent this or that stage of MTs is registered, the higher number of patients die during the first year of life.

In cases of MTs of the bladder and the kidney, the frequency of detecting the certain stages of the pathologic process does not have strong or even average influence on the number of patients who die during the first year after detecting the tumour.

The integral indicator of health of patients, who have undergone the treatment in relation to MTs, and the efficiency of the fulfilled treatment is the indicator of the five-year remission of patients.

In this case, the highest level of the five-year remission is for patients who have MTs of the bladder. On the average, for the nine-year period under consideration every second patients has been living for more than five years after the fulfilled treatment. This indicator has the positive dynamics for different years of research: the proportion of patients with the five-year remission credibly increased ($Z > Z_{05}$) – from 46.9% in 2008 to 56.2% in 2016. The growth rate is 119.8%.

A little less is the indicator of the five-year remission for patients after treating the MTs of kidneys – 48.7%. Its dynamics for the years of research has been also positively characterized: it has credibly increased ($Z > Z_{05}$) – from 42.9% in 2008 to 53.6% in 2016. The growth rate is 124.9%.

The worst thing is the duration of life after the fulfilled treatment in relation to the prostate cancer. The level of this indicator is credibly lower ($F > F_{кр}$ when $p < 0.05$) than in cases of MTs of the bladder and the kidney. On the average, only every third patients survives for five years after the treatment (31.0%). The dynamics of the proportion of the five-year remission for the years of research has not got any fixed tendency, the indicators have demonstrated only occasional fluctuations.

As far as the five-year remission in cases of MTs of edeas is concerned, during the whole nine-year period of research the follow-up care of these patients was systematically submitted, most of all, due to subjective reasons of the patients themselves. Therefore, it is not possible to estimate the real level of this indicator in case of MTs of edeas.

The important issue is the study of circumstances which influence the duration of the five-year remission for patients who have MTs of the urinogenital system. When studying this issue it has been found out that the proportion of persons with the five-year remission in case of MTs of kidneys is strongly directly dependent on the frequency of detecting the incipient stages of MTs ($r=+0.86\pm 0.009$), and also the possibility of the five-year remission is strongly inversely dependent on the frequency of detecting the third stage of the disease ($r=-0.9\pm 0.009$), i.e., the more frequent this or that stage of MTs is registered, the less number of patients have the five-year remission. Nevertheless, the influence of the fourth stage on the number of patients, who reach the five-year remission, is quite average.

In cases of MTs of the bladder and of the prostate gland, the frequency of detecting the certain stages of the pathologic process does not have strong influence on the number of patients who survive for five and more years after detecting the tumour.

Conclusions

1. The Chelyabinsk region is characterized by a high level and negative dynamics of mortality due to MTs of male urinogenital organs in comparison with the nationwide values. In this case, this negative peculiarity is caused only by the indicators of mortality due to the prostate or the kidney cancer.

2. Mortality during the first year after establishing the diagnosis is strongly directly dependent on the frequency of detecting the advanced stages of the tumour process only for patients who have MTs of the prostate gland, but for patients who have MTs of kidneys and of the bladder this relationship is very weak.

3. The proportion of men, who undergo the follow-up care for five and more years, is strongly directly dependent on the frequency of detecting the incipient stages of the tumour process only in cases of MTs of kidneys, but for patients who have MTs of the prostate gland and of the bladder this relationship is weak.

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