

to 1.34 (with  $x_2 = 11.79$ ). Negative levels of tempo of growth (-11.75%) and the average annual pace of increase (-13.33) were also recorded in Ulegorsk. This town is totally different from the other settlements of the Amur region status, with its primary function: the main object of the village before the 2007 year was spaceport Svobodnyj, prior to disbanding — 27-I Krasnoznamenaya far Eastern Division of the strategic rocket forces. Until the year 2018 in present-day village will be built on 25 Tsiolkovsky city thousand inhabitants, which will accommodate staff constructed the cosmodrome Vostochny.

The bulk of the inhabitants is the young working population, therefore, understood the low incidence of breast cancer. Dynamics of standardized and intense incidence of Amur Oblast cities forecast definition to 2018. There is a clear trend towards the gradual rise in the incidence of breast cancer: urban population growth took place in the standardized rate of 1.4 times since 1999 Mr. 57.44 (DI -68.70 47.62) to 79.0 (DI 91.4-67.86) in 2013. Assuming the present epidemiological situation on breast cancer, the incidence of 2018g urban population will increase to 85.43 (DI 72.83-98.03) 1.49 times the initial level and 1.62 times exceeds, the standardized rate. Another great negative changes reflect the intensive analysis of indicators for the period analogical: FE morbidity of urban population increased by 1.52 times with 54.46 (45.15-65.14) in 1999, according to 83.01 (DI -96.04 71.31) in 2013, and 1.7 times change to 2018, 92.76 (DI 82.33 -103.18). However, the numerical values of these indicators vary greatly on individual cities. For the entire period of observation incidence curves has wavy curve with maximum upgrade level of morbidity was observed in Raychikhinsk in 2005 g (185.89 per 1,000). Minimum level, also in Rajchinsk in 2011 (0 per 1,000) is most likely with the peculiarities of accounting for cancer patients. Noteworthy downward trend in incidence rates observed again in Rajchinsk. This can be explained by changes in the economic development of the city-at present the coal mining (the main town-forming enterprise) has dropped markedly.

Totally understandable is the highest incidence in the capital of the Amur region. Blagoveshchensk throughout this period and the continuing poor prognosis up to 2018. Threesome "leaders" on the projected incidence corresponds to a mean rank the place occupied by population among cities in the region. So, the first place on the projected incidence given the continuing trends takes Blagoveshchensk, where the maximum number of inhabitants of the region (more than 1/5)-95.31 ± 13.49 Pro mille (AO to the 2018 will be 52.61 ± 2.75) that confirms the theory of predominance of breast cancer among women in the urban population. The second most populous Belogorsk takes the second place on this level and the expected incidence of breast cancer by 2018, Mr. 88.42 ± 40.65 Pro mille (which again is higher than in General). The third largest city in terms of population-free, though, and takes 4 to date in terms of the incidence of breast cancer -55.03 ± 31.91 to Pro Mille 2013, Rajchinsk-62.70 ± 37.56 to Pro Mille, 2013, however, predicted the 2018 will hold the third rank highest standardized morbidity: 73.61 ± 17.45 to Pro Mille 2018 g (which is also higher than expected total).

Conclusion: analyzing data indicators can conclude clearly marked vast "contribution" cities in the incidence rates of breast cancer, which is coincides with all trends and makes the urban lifestyle to significant exogenous risk factors for breast cancer. The worst figures in the densely populated city area-Blagoveshchensk.

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**EPIDEMIOLOGICAL SIGNIFICANCE OF SPATIAL PATTERNS IN THE INCIDENCE OF BREAST CANCER IN THE AMUR REGION**

**Korobkova T.N., Pisareva L.F., Gordienko V.P., Lysenko O.V.**

**Abstract** A large extent of territory and variability of climatic conditions, the lifestyle of the people living in the vast territory of the Amur region, allow for a comparative analysis of morbidity in selected areas and zones of the area, presumably with different risk factors for breast cancer. Epidemiological studies have shown the presence of variability in the territorial distribution of breast cancer within the natural geographic zones and parts of the area.

**Key words:** breast cancer, female population, morbidity, spatial patterns, Amur region.

The purpose of the work: the study of spatial patterns in the incidence of breast cancer in Amur region in the period from 1999 to 2013 biennium with the identification of the highest-risk zones.

**Materials and methods.** Inform the work served as a database of Amur regional Oncology Center, formed on the basis of official data, accounting and reporting of medical records for the period from 1999 to 2013 biennium. In the context of the work of the incidence of this pathology was estimated as the total for 15 years, and three five-year periods: 1999-2003, 2004-2008, 2009-2013 biennium. The object of the study was each case of breast cancer, registered in the Amur region to some natural geographic area. Statistical estimation and calculation methods obtained data were carried out on the basis of modern methods of calculation.

**Results and discussion:** has been studied the spatial dynamics of the incidence of breast cancer over a given period of time, taking into account the dividing field at 3 soil-geographical zones. So, to Northern soil-geographical zone are 4 districts: Zeysky, Selemdzhinsky, Skovorodinsky, Tyndinsky. South - 13 districts: Arkharinsky, Belogorsky, Annunciation, Bureysky, Zavitskiy, Ivanosky, Constantinjvsky, Michaelovsky, Oktyabrsky, Romnensky, Svobodnensky, Seryshevsky, Tambovsky district. Transition-3 districts: Magdagachinsky, Mazanovsky, Shymanovsky. Analyzing the average three five-year periods of standardized incidence rates of breast cancer, pay attention almost the same digital values on a per-zone basis for the entire observation period from 1999 to 2013 biennium, which amounted to 58.01 (62.76- 53.48); 57.27 (60.24- 54.4) and 58.02 (64.92- 51.64)-(the difference is not statistically significant) in North, South and Transitional areas.

This situation may indicate action common mechanisms of carcinogenesis at women living in different geochemical provinces in the area or their universality in relation to breast cancer. However, there has been a very negative trend in the northern zone, characterized by a sharp increase in incidence with the first to the second five-year plan, more than a third: from 48.10 to Pro Mille 60.8 (22.7 Pro Mille) which was 34.04%. Such pronounced changes can be attributed to the sudden changes in age composition of the population related to migratory processes in the post-Perestroika period "and" end construction of BAM. Minimum levels rise in the incidence of breast cancer was observed in women living in the transition zone: 55.29-57.37-61.50 per 1,000, respectively, the periods of observation. Analysis of the incidence of breast cancer among women in the northern zone in single years over 15 years shows a steady increase over time: from 54.05 per 1,000 in 1999 to 75.77 per 1,000 in 2013 g. While noting the average correlation (direct):  $\text{corr} = 0.66$ . Forecast for the year 2018 is 79.6 per 1,000. evaluation of standardised the southern zone also indicates their sufficient variabell, however, a clear trend towards the growth of morbidity for breast cancer with 51.23 per 1,000 in 1999 to 64, 36 per 1,000 in 2013, when  $\text{corr} = 0.72$  (statistically significant increases in the incidence.) When the expected incidence to 2018 g. 72.20 per 1,000. will be Tracked in years of standardized incidence rates of breast cancer in the transition zone is characterized by abrupt amplitude on individual, p. Odum, however in General for 15 years increase the incidence statistically not significant ( $\text{corr} = 0.26$ ) of 55.82 per 1,000 in 1999 to 93.65 per 1,000 in 2013, when the forecast to 2018, 68.05 per 1,000.

Thus, the transitional nature geohimical area, compared to the South and North areas characterized by relatively favourable epidemiological situation on breast cancer. It is easy to see that this tendency can be seen in studying intensive performance of individual zones for years: there is a steady increase in incidence in all zones, with a predominance in Northern climatic zone: to 2018 expected intense incidence on the northern zone amounted to 84.74 on 100 thousand (74.46 -95.02), in the South zone - 81.12 on 100 thousand inhabited (74.63 -87.60), the transition zone-77.27 on 100 thousand population (46, 77-107, 76). The relatively high incidence of breast cancer in the northern zone can be explained with the likely consequences of Adaptive stress developed under the long influence of the harsh climatic conditions in this part of the region and, as a consequence, caused profound changes in hormonal homeostasis. For confirmation of morbidity dynamics received parts of the area during the study period for years was held analysis of standardised parts, build a forecast to 2018. When examining the standardised identified areas with the lowest values at the beginning of the study period (1999 g): Mazanovsky District-12.19 (0.3 -67.9), Constantovsky-27.09 (0.68 -150.88), Michalovsky-21.83 (0.55 -121.58), Selemdzhinsky-18.04 (0.45 -100.47), Zeysky-34.33 (67.64- 14.8), Tambovsky-38.10 (97.53 -10.36). Maximum values were observed in Blagoveschensk-60.39 (46.07- 77.72), Arharinsky-64.29 (23.84- 141.6), Annunciation-57.98 (135.08- 18.78) 53.40-Bureysky (85.44- 31.13), Zavitskiy-64.99 (41.68- 23.85), Ivanovsky-61.7 (26.59 -121.56), Magdagachinsky-79.47 (146.22- 38.15), Romnensky-62.54 (82.63- 12.88), Svobodnensky-56.75 (35.98 -85.12), Tyndinsky- 79.13 (48.35 -121.86), Skovorodinsky-57.28 (112.85- 24.69) areas.

With a total area of 38.74 amounted to Pro mille (33.8 -43.68). In the final study (2013 y.) high levels observed in the city of Blagoveshchensk-98.33 (119.57- 80.04), corr= 0.67-increase statistically significant; Arharinsky district-81.61 (32.72 -168.11), corr= 0.34-no significant increase in the incidence of Zavitsinsky district-92.7 (182.61- 39.95), corr= 0.17-nothe growth of morbidity; Zejsky area-79.08 (123.36- 47.61), corr= 0.7-a significant increase in cases, Ivanovsky region-71.08 (32.55 -135.05), corr= 0.23-statistically insignificant increase in the incidence of Mazanovsky district -76.51 (178.28- 24.79), corr= 0.22-increase in the incidence of minor, Romnensky district, 102.80 (33.31-239.51), corr= 0.34-increase in the incidence of minor, Seryshevsky area is 60.7 (24.34 -125.05), corr= 0.45-increase in the incidence of mild, Skovorodinsky area-100.75 (169.26- 55.01), corr= 0.05-rising incidence statistically is not selected, the Tambovsky area 67.17 (28.95-132.33), corr= 0.34-increase in the incidence of minor, Shimanovskom-127.56 (76.79 -199.0), corr= 0.3-slight increases in the incidence. Marked areas with negative growth of breast cancer incidence: Konstantinovskiy District-40.81 (147.31- 4.94), corr=-0.02, Magdagachinsky-62.68 (1 25.10-28.92), corr=-0.10, Oktyabrskiy-40.46 (118.15- 8.34), corr= 0.39.

While the overall incidence of area in 2013, amounted to Pro Mille 52.84. So, the incidence for selected areas of AO is characterized by heterogeneity of units annual indicators of different growth dynamics and thrust trends. In doing stho unfavourable epidemiological trend in Zejsky district (northern zone), Seryshevsky and Romnensky areas (South zone), the most favourable- Ochyabrsky, Konstantinovskiy areas (South zone), Magdagachinsky (transition zone). Increase in incidence was observed in both temporal and spatial framework. Thus, in assessing the dynamics of morbidity based on absolute and average annual absolute increments, and annual growth pace of positive growth in the digital equivalent and highly heterogeneous area indicators. Thus, the maximum values were observed in the northern zone, which nearly a third were higher compared to the transition zone (minimum rates). Analyzing the high tempo of growth figures of morbidity in the northern zone between 1999-2003 to 2009-2013 constituting 35.27% of the extremely unfavourable epidemiological trends of breast cancer in this geochemical province. A more detailed analysis of the characteristics of the growth of morbidity also revealed significant heterogeneity across regions within individual zones. So, maximum absolute increase in incidence was observed in the Selezdzhinsky area (North zone)-31.68, the minimum that has a negative value (to reduce the incidence of breast cancer) are in the Oktyabrsky district (South zone)-26.01 with a minus sign.

Thus, maximum heterogeneity in absolute terms was in the southern zone (absolute growth rates contain high and positive and negative values in selected areas) that may be associated with different socio-economic situation of the people living in the zone. A detailed analysis of the territories with both high and low prevalence will identify factors on breast cancer risk in individual territories AO, as well as to adequately develop measures of primary and secondary prevention, taking into account the socio-economic status as integral indicator. When examining the growth of morbidity in areas separately also taped sharp heterogeneity indices: maximum rate of increase in the incidence of breast cancer during the study period was marked by the Selezdzhinsky area (North zone)-87.79% minimum in the Oktyabrsky district (South zone)-40.81% minus (the most significant decline in the incidence of breast cancer). High levels of tempo of growth were observed in areas of the southern zone: Annunciation-53.89%, Romnensky-52.71% and Seryshevsky-60.81% areas.

The presence of regions with an extremely low growth rate-Bureysky-6.12% and negative growth (decline)-Konstantinovskiy -11.53% minus allowed in the whole area of reverse a negative trend in the incidence of breast cancer. Accordingly, the existing highly uneven numbers of absolute and average annual absolute growth in the southern zone has considerable scale and growth rate: maximum-60.8% in Seryshevsky area to a minimum-the minus 40.81% in Oktyabrsky district. Based on standardised dynamics for the period 1999-2013 biennium. Using linear regression equation calculated forecast morbidity in general and on specific areas of the field until 2018, subject to maintaining the existing trends prognostically, in general, the expected stabilization of the disease with a 2013 g ( $52.84 \pm 5.73$ ) and 2018 g. will be  $\pm 2.75$  52.61 per 1,000, but a significant increase in 1.4 times as compared with 1999 ( $38.74 \pm 4.94$ ).

Given the significant size of the territory and the heterogeneity of risk factors related to various natural geochemical and socio-economic factors, defined areas with extremely high expected to 2018 g. incidence of breast cancer in the region. South zone: Blagoveschensk-95.31  $\pm$  13.49 per 1,000, Belogorsky -82.82  $\pm$  34.34 per 1,000, Zavitsinsky district-85.0  $\pm$  47.22 Pro Mille, Romnensky district-92.27  $\pm$  60.15 per 1,000, Seryshevsky district-109.94  $\pm$  58.46 per 1,000. North zone: Zejsky district-90.31  $\pm$  21.35 per 1,000. Transition zone: Szymanovski district-80.32  $\pm$  48.33. Analogical defined areas with the most optimistic prognosis: the Konstantinovskiy-41.55  $\pm$  32.4 per 1,000 and Oktyabrsky-20.53  $\pm$  37.96 per 1,000, areas of the southern zone. In Magdagachinsky district (transition zone)-50.16  $\pm$  37.77 per 1,000. Analysis of epidemiological features of breast cancer in the Amur region and obtained data on major trends in incidence are the basis for the adequate planning of the entire Oncology service in the region. Study of the dynamics of the relative risk factors necessary to establish territorial distribution characteristics of breast cancer and develop sound action fight against cancer in individual areas. Given the heterogeneity of morbidity in both natural areas and parts of the area, as well identified and different levels of relative risk of breast cancer, likely with different socio-economic and natural living conditions. So, during the study period from 1999 to 2013 biennium, a statistically significant

relative risk increase is observed in Blagoveschensk- $1.22 \pm 0.7$  ( $\chi^2 = 34.21$ ), Zavitskiy area- $1.33 \pm 0.32$  ( $\chi^2 = 9.0$ ); There is an upward trend in Svobodnensky area of  $-1.1 \pm 0.46$  ( $\chi^2 = 3.0$ ). Statistically significant decrease in relative risk was observed in Blagoveshchensk district- $0.75 \pm 0.18$  ( $\chi^2 = 5.24$ ) Konstantinovsky district- $0.68 \pm 0.15$  ( $\chi^2 = 6.59$ ), Mikhailovsky area  $-0.76 \pm 0.18$  ( $\chi^2 = 4.25$ ), Oktyabrsky district- $0.69 \pm 0.17$  ( $\chi^2 = 8.64$ ), Tambovsky area is  $0.79 \pm 0.22$  ( $\chi^2 = 4.87$ ). In General, the area during the monitoring period, the risk of incidence of breast cancer, relative to the region of Siberia and the far East, amounted to  $0.97 \pm 0.28$  ( $\chi^2 = 3.12$ ), i.e. statistically not significant: Amur region is not allocated to morbidity among other territories in the region.

Conclusion: spatial patterns of distribution of breast cancer among the population of the Amur region have territorial specificity through the climatic factors. Morbidity of the population of the North region is characterized by an unfavorable trend, but statistically Amur region is not allocated to morbidity among other territories in the region.

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### THE TEMPORAL ASPECT OF BREAST CANCER MORBIDITY IN FEMALE POPULATION IN A GIVEN REGION ON THE EXAMPLE OF THE AMUR REGION

Korobkova T.N.

Amur State Medical Academy, Blagoveshchensk, Russia

**Abstract** Breast cancer refers to diseases, occupying a leading position in the structure of morbidity, disability and mortality of the female population, causing great damage to the reproductive potential of the country as a whole, and the region. The incidence of breast cancer in the last 5 years has a strong tendency to growth, while maintaining the highest levels of growth. It is known that in Russia in 2013, the absolute number with the first ever diagnosed breast cancer among women amounted to 60717.

"Rough figure" JSC on 2013, totaled 82.75 at 100 thousand. Female population, standardized metric  $52.52 \pm 2.9$  (in the Russian Federation "rough" RF indicator on 2013, totaled 78.8, standardized metric  $47.05 \pm 0.2$ ). By DFO "rough" value on 2013, totaled 77.45 at 100 thousand female population, standardized metric  $49.13 \pm 1.01$ . In breast cancer morbidity in female population of JSC is also characterized by steady growth, which suggests an unfavourable epidemiological trends. Stably high rates reflect the continuing effects of risk factors on the population living in the region.

**Key words:** breast cancer, female population, morbidity, Amur region.

The purpose of the work: learn the basic temporary incidence rates of breast cancer in the Amur region during the period from 1999 to 2013 biennium with an analysis of their features.

**Materials and methods.** Inform the work served as a database of Amur Oncology Center, formed on the basis of official data, accounting and reporting of medical records for the period 1999-2013 biennium. In the context of the work of the incidence of this pathology was estimated as the total for 15 years, and three five-year periods: 1999-2003, 2004-2008, 2009-2013 biennium. The object of the study was each case of breast cancer, registered in the Amur region. Statistical estimation and calculation methods obtained data were carried out on the basis of modern methods of calculation.

**Results and discussion.** Analyzing the figures, you can see their steady growth. So, during the monitoring