Introduction

The monitoring of prevalence peculiarities, cancer morbidity patterns and mortality among rural and urban residents is an overriding issue, giving the necessary information about the health of adults and children. Epidemiological research pursued in Kazakhstan has shown that the pattern of laryngeal cancer, leukemia and breast cancer prevalence depends on ethnic and gender differences, unfavorable environmental conditions (Bilyalova et al., 2012; Igissinov et al., 2012; Igissinov et al., 2013). Previous research has shown that technogenic chrome biogeochemical province has a direct impact on the prevalence of malignant tumors among the urban residents and cancer pathologymortality rate (Bekmukhambetov et al., 2015). In such case the health status of rural residents inhabiting Aktobe region, physical and sexual development indicators depend not only on the nature of food, but also on environmentally neglected territory of inhabitation (Mamyrbayev et al., 2013; Battakova et al., 2014; Bermagambetova et al., 2015) it cannot be ruled out that the consequences of nuclear explosions conducted in West Kazakhstan have an impact on development of malignancies among rural residents (Mamyrbayev et al., 2014; Urgushbaeva et al., 2015).

Materials and Methods

All epidemiological surveys are carried out on the territory of Aktobe region, which includes 12 districts. In the present paper the official oncological statistics of new cancer cases is used. The “crude” one and standardized by age and sex markers of malignant tumors incidence are calculated. Epidemiological analysis of cancer incidence and mortality, built upon 100 thousand people, is conducted since 2004 till 2013 by extracting of statistical material from registration forms №7, № 030-y, №025-y, № 090-y, as well as from Department of statistics. Standardization is conducted by direct method. The average annual rates of growth (loss) are calculated by method of regression analysis. The list of diseases was based on the ‘International Classification of Diseases, Injuries and Causes of Death Manual, 10th Edition’

Results

The total prevalence of cancer pathology (per 100,000...
Analysis of malignant neoplasms prevalence among adults in Aktobe region for 2004-2013 is represented in Figures 1 and 2. Ranking pathology on-studies, the highest incidence among women is registered from breast cancer, cervix uteri, ovary and corpus uter, stomach, esophagus; they are following by trachea, bronchus, lungs and bladder. Some what different situation of the malignant tumors incidence is diagnosed among men. The first place in rank takes trachea, bronchus, lung, stomach and esophagus oncopathology, which are followed by bladder, lymphoid and hematopoietic tissues pathology. At the same time the spectrum of malignant tumors prevalence is quite wide, it includes the localization of malignant tumors in other organs and tissues, what is quite rare.

Main localizations in the structure of cancer incidence among girls are blood (acute lymphocytic leukemia, lymphosarcoma, acute myeloid leukemia, Hodgkin’s disease), brain and central nervous system, bones and articular cartilages, kidneys, eye and it’s appendages, pancreas and ovary (Figure 3).

A substantial proportion of malignant neoplasms prevalence among boys also is detected in hematopoietic system (acute lymphocytic leukemia, lymphosarcoma, Hodgkin’s disease, acute myeloid leukemia); followed by brain and central nervous system, bones and articular cartilages, kidneys, eye and it’s appendages, bladder, pancreas and testicular (Figure 4).

The malignancies incidence among young women and men is represented on Figures 5 and 6. The major percentage in the structure of cancer incidence among women is detected in blood and lymphatic tissues (acute myeloid leukemia, acute lymphocytic leukemia, Hodgkin’s disease). A significant percentage accrues to lymphosarcoma, lymphoma, other myeloid leukemia and hematological malignancies as well as tumors of brain and central nervous system, bones and articular cartilages. The similar trend is found during research of malignant neoplasms prevalence among young men; the
major proportion in the structure of cancer morbidity takes oncopathology of blood and lymphatic tissue; the proportion of brain and central nervous system, bones and articular cartilages, and skin tumors is quite significant.

The population mortality rate in Aktobe region caused by malignant neoplasms (per 100 thousand people) is presented in Table 1. The cumulated measure of mortality rate both in absolute terms and per 100 thousand people during the study period (2004-2013) has a tendency to increase.

Top ten positions in the structure of both male and female population mortality (in absolute terms and per 100 thousand people) are ordered in the following way: first place - neoplasms of the trachea, bronchus, lung; the second - malignant tumors of the stomach; third

Figure 6. Oncopathology Prevalence among Young Men in Aktobe Region

Table 1.1. Mortality Rate of Aktobe Region Caused by Oncopathology(per 100,000), 2004-2008

| Tumor localization                  | ICD code X               | 2004 abs. | 2004 per 100000 | 2005 abs. | 2005 per 100000 | 2006 abs. | 2006 per 100000 | 2007 abs. | 2007 per 100000 | 2008 abs. | 2008 per 100000 |
|-------------------------------------|--------------------------|-----------|-----------------|-----------|-----------------|-----------|-----------------|-----------|-----------------|-----------|-----------------|
| Malignant neoplasms                 | C00-C97                  | 666       | 98.1            | 714       | 104             | 732       | 105.3           | 653       | 92.8            | 736       | 97.3            |
| Lips                                | C00                      | 3         | 0.4             | 0         | 0               | 3         | 0.4             | 4         | 0.6             | 1         | 0.1             |
| Tongue, oral cavity and pharynx     | C01-C14, C46.2           | 26        | 3.8             | 20        | 2.9             | 13        | 1.9             | 12        | 1.7             | 25        | 3.3             |
| Esophagus                           | C15                      | 78        | 11.5            | 89        | 13              | 71        | 10.2            | 63        | 9               | 99        | 13.1            |
| Stomach                             | C16                      | 90        | 13.3            | 104       | 15.1            | 114       | 16.4            | 94        | 13.4            | 85        | 11.2            |
| Segmented intestine                 | C18                      | 29        | 4.3             | 24        | 3.5             | 24        | 3.5             | 23        | 3.3             | 29        | 3.8             |
| Rectum, rectosigmoid junction, anus | C19-C21                  | 16        | 2.4             | 18        | 2.6             | 22        | 3.2             | 26        | 3.7             | 30        | 4               |
| Liver                               | C22                      | 42        | 6.2             | 42        | 6.1             | 33        | 4.7             | 24        | 3.4             | 43        | 5.7             |
| Pancreas                            | C25                      | 17        | 2.5             | 0         | 0               | 26        | 3.7             | 23        | 3.3             | 21        | 2.8             |
| Larynx                              | C32                      | 10        | 1.5             | 13        | 1.9             | 14        | 2               | 10        | 1.4             | 11        | 1.5             |
| Trachea, bronchus, lung             | C33 - C34                | 128       | 18.9            | 110       | 16              | 149       | 21.4            | 136       | 19.3            | 138       | 18.2            |
| Bones and articular cartilages      | C40 - C41                | 8         | 1.2             | 14        | 2               | 8         | 1.2             | 6         | 0.9             | 4         | 0.5             |
| Connective and other soft tissues   | C45, C46.1, C47, C49     | 1         | 0.1             | 0         | 0               | 10        | 1.4             | 4         | 0.6             | 10        | 1.3             |
| Skin melanoma                       | C43                      | 2         | 0.3             | 6         | 0.9             | 2         | 0.3             | 3         | 0.4             | 4         | 0.5             |
| Other skin cancers                  | C44, C46.0               | 21        | 3.1             | 1         | 0.1             | 4         | 0.6             | 1         | 0.1             | 0         | 0               |
| Breast                              | C50                      | 57        | 8.4             | 41        | 6               | 70        | 10.1            | 55        | 7.8             | 59        | 7.8             |
| Uterine cervix                      | C53                      | 20        | 2.9             | 23        | 3.3             | 17        | 2.4             | 24        | 3.6             | 29        | 3.8             |
| Uterine body                        | C54                      | 5         | 0.7             | 27        | 3.9             | 13        | 1.9             | 6         | 0.9             | 13        | 1.7             |
| Ovary                               | C56                      | 16        | 2.4             | 29        | 4.2             | 20        | 2.9             | 25        | 3.6             | 21        | 2.8             |
| Prostate gland                      | C61                      | 4         | 0.6             | 5         | 0.7             | 9         | 1.3             | 4         | 0.6             | 8         | 1.1             |
| Testis                              | C62                      | 1         | 0.1             | 1         | 0.1             | 2         | 0.3             | 4         | 0.6             | 1         | 0.1             |
| Kidney                              | C64                      | 18        | 2.7             | 17        | 2.5             | 12        | 1.7             | 13        | 1.8             | 8         | 1.1             |
| Bladder                             | C67                      | 4         | 0.6             | 21        | 3.1             | 8         | 1.2             | 4         | 0.6             | 12        | 1.6             |
| Eye and appendages of the eye       | C69                      | 0         | 0               | 1         | 0.1             | 0         | 0               | 3         | 0.4             | 1         | 0.1             |
| Brain and CNS                       | C70-C72                  | 4         | 0.6             | 8         | 1.2             | 6         | 0.9             | 7         | 1               | 5         | 0.7             |
| Thyroid body                        | C73                      | 3         | 0.4             | 6         | 0.9             | 9         | 1.3             | 3         | 0.4             | 3         | 0.4             |
| Malignant lymphomas                 | C81-C90                  | 15        | 2.2             | 21        | 3.1             | 16        | 2.3             | 22        | 3.1             | 22        | 2.9             |
| Leukemia                            | C91C95, C96              | 20        | 2.9             | 25        | 3.6             | 19        | 2.7             | 17        | 2.4             | 19        | 2.5             |
| Others                              |                          | 28        | 4.1             | 48        | 7               | 38        | 5.5             | 36        | 5.1             | 35        | 4.6             |
- tumors of the esophagus; fourth - tumors of breast cancer; fifth - tumors of the liver; six - tongue, oral cavity, pharynx mouth and throat cancer. Malignant neoplasms of the female reproductive system (tumors of the cervix and body of uteri, ovary) and tumors in the blood and lymphatic system (malignant lymphoma, leukemia) bring in a significant proportion in the mortality rate of the population. Quite high mortality rates are caused by tumors settled in the colon and straight intestine, pancreas, kidneys, larynx, bladder and skin.

Discussion

As a result it is specified that within the territory of Aktobe region there are some special aspects of malignant tumors morbidity rates and patterns among adults as well as children and teenagers. The uptrend in cumulated measure of oncopathology rate for last ten years takes attention. The first place among women is taken by oncopathology of the reproductive system, and among men the leading positions are taken up by neoplasms of trachea, bronchus, lung and stomach. Among children, both girls and boys, the significant proportion of malignant neoplasms prevalence is taken by oncopathology in hematopoietic system (acute lymphocytic leukemia, lymphosarcoma, Hodgkin’s disease, acute myeloid leukemia); it is followed by brain and central nervous system, bones and articular cartilages, kidneys, eye and its appendages, bladder, testicular and pancreas tumors. The hematopoietic tissue and lymph are the main oncopathology among boys and girls.

Table 1.2. Mortality Rate of Aktobe Region Caused by Oncopathology (per 100,000), 2009-2013

| Tumor localization                  | ICD code X  | 2009 abs. per 100000 | 2010 abs. per 100000 | 2011 abs. per 100000 | 2012 abs. per 100000 | 2013 abs. per 100000 |
|-------------------------------------|-------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Malignant neoplasms                | C00-C97     | 724                  | 94.8                 | 746                   | 96                    | 727                   | 92.5                 | 765                   | 96.1                 | 811                   | 100.3                |
| Lips                               | C00         | 4                    | 0.5                  | 2                     | 0.3                   | 1                     | 0.1                  | 2                     | 0.3                  | 3                     | 0.4                  |
| Tongue, oral cavity and pharynx    | C01-C14,C46.2 | 21               | 2.8                  | 24                    | 3.1                   | 30                    | 3.8                  | 24                    | 3                    | 24                    | 3                    |
| Esophagus                           | C15         | 86                   | 11.3                 | 75                    | 9.6                   | 83                    | 10.6                 | 79                    | 9.9                  | 68                    | 8.4                  |
| Stomach                             | C16         | 99                   | 13                   | 105                   | 13.5                  | 115                   | 14.6                 | 98                    | 12.3                 | 106                   | 13.1                 |
| Segmented intestine                 | C18         | 22                   | 2.9                  | 31                    | 4                     | 25                    | 3.2                  | 30                    | 3.8                  | 32                    | 4                    |
| Rectum, rectosigmoid junction, anus | C19-C21     | 32                   | 4.2                  | 33                    | 4.2                   | 30                    | 3.8                  | 30                    | 3.8                  | 45                    | 5.6                  |
| Liver                               | C22         | 45                   | 5.9                  | 32                    | 4.1                   | 29                    | 3.7                  | 52                    | 6.5                  | 40                    | 4.9                  |
| Pancreas                            | C25         | 20                   | 2.6                  | 31                    | 4                     | 29                    | 3.7                  | 26                    | 3.3                  | 25                    | 3.1                  |
| Larynx                             | C32         | 12                   | 1.6                  | 16                    | 2.1                   | 11                    | 1.4                  | 11                    | 1.4                  | 9                     | 1.1                  |
| Trachea, bronchus, lung             | C33 - C34   | 127                  | 16.6                 | 127                   | 16.3                  | 116                   | 14.8                 | 125                   | 15.7                 | 146                   | 18                   |
| Bones and articular cartilages      | C40 - C41   | 5                    | 0.7                  | 2                     | 0.3                   | 8                     | 1                    | 3                     | 0.4                  | 10                    | 1.2                  |
| Connective and other soft tissues   | C45,C46.1,C47,C49 | 8                  | 1                    | 9                     | 1.2                   | 4                     | 0.5                  | 4                     | 0.5                  | 5                     | 0.6                  |
| Skin melanoma                       | C43         | 8                    | 1                    | 1                     | 0.1                   | 3                     | 0.4                  | 4                     | 0.5                  | 1                     | 0.1                  |
| Other skin cancers                  | C44, C46.0  | 0                    | 0                    | 0                     | 0                     | 0                     | 0                    | 0                     | 0                    | 5                     | 0.6                  |
| Breast                              | C50         | 45                   | 5.9                  | 64                    | 8.2                   | 68                    | 8.6                  | 70                    | 8.8                  | 60                    | 7.4                  |
| Uterine cervix                      | C53         | 31                   | 4.1                  | 26                    | 3.3                   | 29                    | 3.7                  | 41                    | 5.2                  | 37                    | 4.6                  |
| Uterine body                        | C54         | 11                   | 1.4                  | 19                    | 2.4                   | 7                     | 0.9                  | 11                    | 1.4                  | 13                    | 1.6                  |
| Ovary                               | C56         | 21                   | 2.8                  | 32                    | 4.1                   | 22                    | 2.8                  | 20                    | 2.5                  | 29                    | 3.6                  |
| Prostate gland                      | C61         | 6                    | 0.8                  | 13                    | 1.7                   | 6                     | 0.8                  | 17                    | 2.1                  | 12                    | 1.5                  |
| Testis                              | C62         | 2                    | 0.3                  | 0                     | 0                     | 4                    | 0.5                  | 3                     | 0.4                  | 0                     | 0                    |
| Kidney                              | C64         | 9                    | 1.2                  | 12                    | 1.5                   | 14                    | 1.8                  | 13                    | 1.6                  | 26                    | 3.2                  |
| Bladder                             | C67         | 16                   | 2.1                  | 11                    | 1.4                   | 8                     | 1                    | 6                     | 0.8                  | 9                     | 1.1                  |
| Eye and appendages of the eye       | C69         | 0                    | 0                    | 2                     | 0.3                   | 1                     | 0.1                  | 0                     | 0                    | 0                     | 0                    |
| Brain and CNS                       | C70-C72     | 6                    | 0.8                  | 17                    | 2.2                   | 7                     | 0.9                  | 19                    | 2.4                  | 25                    | 3.1                  |
| Thyroid body                        | C73         | 6                    | 0.8                  | 4                     | 0.5                   | 4                     | 0.5                  | 7                     | 0.9                  | 2                     | 0.2                  |
| Malignant lymphomas                 | C81-C90     | 17                   | 2.2                  | 16                    | 2.1                   | 17                    | 2.2                  | 8                     | 1                    | 10                    | 1.2                  |
| Leukemia                            | C91C95,C96  | 25                   | 3.3                  | 17                    | 2.2                   | 25                    | 3.2                  | 13                    | 1.6                  | 25                    | 3.1                  |
| Others                              |             | 40                   | 5.2                  | 25                    | 3.2                   | 31                    | 3.9                  | 49                    | 6.2                  | 44                    | 5.4                  |
Aggregate data of population mortality rate caused by oncopathology in Aktobe region, in absolute numbers as well as per 100 thousand people had a tendency to increase during research time. Wherein the mortality rate is absolutely differentiated by tumors localization in a particular organ or tissue.

Investigation of neoplasms prevalence and causes, cancer incidence structural features and blastemas mortality rate for different population groups, including children and teenagers, gives a new perspective for determination the oncology disease causes and the factors which hasten their onset. Numerous epidemiological research works in the sphere of malignant tumors incidence, based on geographical, mineralogical and geological environment features, the ethnic population make-up, social traditions, bad habits and occupational factors are presented in works of Moore et al., 2010; Kutikhin et al., 2012; Moore et al., 2009; Cambra et al., 2011; Crouse et al., 2010.

A fair quantity of researches pursued in West Kazakhstan, more specifically in Aktobe region revealed the presence of ecological relationships between environmental, social factors and medical condition of local people. The decrease of immunologic responsiveness and accumulation of heavy metals in biological medias (Zasorin et al., 2012; Mamyrbayev et al., 2012), the growth of allergic diseases occurrence (Mamyrbayev et al., 2012), the formation of unfavourable social factors aggregation (Battakova et al., 2014; Bekmukhambetov et al., 2015), lesion of nutritional status among local population (Battakova et al., 2014) have resulted in decline of general health indicators among adult as well as young population (Kenesariyev et al., 2012; Mamyrbayev et al., 2013). In addition to the above it is found out that the invalidism level among region population has increased; the nature of disability and incapacitation mortality rates are determined by structure of morbidity among children and adults (Mamyrbayev, Kurchashev et al., 2013).

As it is known, a multi variant analysis, which defines the human environment, allows to substantiate the interpretation of malignant tumors prevalence and its causes. Where in the expression level of many risk factors is determined by regional specific features and lifestyle conditions. Aggregate factors affecting the population determine age specific patterns and stable structural relations of malignant neoplasms various nosological forms. The statistical and epidemiological data for the malignant neoplasms incidence among different population groups and mortality caused by them is the basis for development of regional and national antitumor programs and making of substantiated management decisions.

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