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T. S. Khaidarova¹, A. Z. Zhilkaidarova²,
G. A. Kurmangalieva³, B. S. Abylkasymov³, S. Z. Berikbolova⁴

¹Professor, d.m.s. al-Farabi KazNU, Almaty, Kazakhstan,

²Head of Department KazSRI of Oncology and Radiology MH RK, Kazakhstan,

³Master's degree in "Management in health care" EKO, Kazakhstan,

⁴Medical expert, clinical pharmacologist, Almaty Regional Oncological Clinic, Kazakhstan.

E-mail: khaidarovat@gmail.com alma_zh@inbox.ru gulik-bokin@mail.ru beskaragai@rambler.ru
Berikbolova_saltanat@mail.ru

ANALYSIS OF QUALITY INDICATORS OF BREAST CANCER SCREENING

Abstract. *Relevance of research.* Screening for detection of breast cancer in Kazakhstan has been held since 2008, but the analysis showed that the quality indicators of screening for breast cancer in Kazakhstan is not observed positive dynamics on reduction of mortality from breast cancer, the 5-year survival rates for breast cancer. *Purpose of the study:* to compare quality indicators of screening for breast cancer (incidence, mortality, 5-year survival) in the Republic of Kazakhstan and countries OECD. We used *the method of statistical analysis* of the performance of screening breast cancer incidence, mortality and 5-year survival rate from breast cancer by 35 countries OECD. Data sources for indicators of breast cancer screening was the world and European database of cancer: Globocan 2012-2015, collection Health at a Glance 2015-2017: OECD Indicators for period 2012-2017 and data of MHRK, MNE RK, SRI of Oncology and Radiology MHRK. *Results of research:* in the nearly 10-year period of implementation of screening, there is an increasing incidence of breast cancer (73.5 per 100 thousand women), by increasing the detection of breast cancer. Level of identification of breast cancer at the I stage was 39% in 2016 that below the recommended European recommendations (70%). The analysis showed that there is no positive dynamics in reducing mortality (the death rate from breast cancer in Kazakhstan amounted to 21.9 per 100 thousand women, 43% die in working age) and increasing 5-year survival (in the OECD countries - 91,0%, in RK – 50,4%). Does not change the structure of population mortality, 2011 deaths from cancer is in second place.

Key words: screening for breast cancer, OECD, incidence, mortality, 5-year survival.

Relevance of research. Breast cancer is a malignant tumor in the chest area, which is a serious medical and social problem for all countries of the world. Among cancers, breast cancer (BC) occupies a leading position in morbidity and mortality. According to statistics, more than 1 500 000 women worldwide suffer from this disease, about 400 000 cases end in a tragic outcome [1]. The world learned to carry out prevention of risk factors for developing cancer and early detection of cancer of the breast, therefore, many countries have successfully reduced mortality from breast cancer. In the structure of total mortality according to the Ministry of national economy of Kazakhstan on January 1, 2017, the death rate from cancer in the overall mortality was 14% and took the 3rd place after mortality from circulatory diseases (27%) and deaths from respiratory diseases (15 %). In 2015, cancer took the second place in the structure of total mortality [2]. Thus, breast cancer represents a major public health problem of RK because of the high mortality, morbidity, low 5-year survival.

Purpose of the study. To compare quality indicators of screening for breast cancer (incidence, mortality, 5-year survival) in the Republic of Kazakhstan and the countries of the Organization for economic cooperation and development.

Material and methods of a research. We used the method of scientific review, statistical analysis of indicators of screening for breast cancer according to world and European databases on incidence,

mortality and 5-year survival rate from breast cancer by 35 countries. The indicators of the OECD countries – 35 determined on the basis of Globocan 2012-2015, and statistics on the health of the population of the countries of the Organization for economic cooperation and development (OECD) by collection Health at a Glance 2015-2017: OECD Indicators for period 2012-2017. The article also used data from the statistical compendium of the WHO "Global statistics" for period 2012-2015. In RK they were used for analysis data reporting MHRK for 2016-2017, research of other authors, reporting the data of SRI of Oncology and Radiology MHRK.

Results and discussion

BC place in the structure of cancer incidence. In most of the world, malignant neoplasms of the breast ranks first in the structure of cancer incidence. In the structure of all malignancies in the Republic of Kazakhstan, the share of malignant neoplasms of the breast in 2014 was 12.1% (1 rank position in 2011) [3].

The incidence of breast cancer in the world has a tendency to increase. Incidence rates (according to statistics Health at a Glance 2017: OECD Indicators for 2012-2017) in different countries vary: in the Asia-Pacific region from 103‰ in Israel; 102,5‰ in Armenia; 96,8‰ in Singapore; 86,0‰ in Australia; 85,9‰ in Japan (regions of high incidence of tumor diseases of the breast), and to lower the incidence, as 34,7‰ in Bahrain; as 40,8‰ in Turkey. Intermediate (between high and low incidence) data on cases of breast cancer was observed in Kazakhstan -73,5‰, then in South Korea -70,3‰. Very high levels of morbidity observed in the United States (92,9‰) and Canada (79,8‰) [4]. Thus, in countries OECD - 34 incidence of breast cancer high, the high levels observed in Western Europe, USA, Canada. In Kazakhstan the incidence of breast cancer according Health at a Glance 2017 – made 73.5 on 100 thousand women [4], that indicates an increase in the incidence of breast cancer by screening.

According to other sources, in the CIS there is a fluctuation in the incidence of breast cancer from low (Azerbaijan 25,4‰, Uzbekistan 27,1‰, Kyrgyzstan 27,3‰) to the average (Russian Federation 45,6‰, Ukraine 41,3‰, Belarus 45,9‰) [3]. Only Kazakhstan (73,5‰) among the countries is with the highest incidence (table).

Mortality from breast cancer in the world has a tendency to decrease. In scientific literature, there are a lot of data about the positive effects of mammographic screening in reducing mortality from breast cancer. According to the American cancer society, screening has an impact on reduction of mortality from breast cancer, regardless of ongoing chemotherapy. The annual rate of decline mortality was 2.3%, and thus the reduction in mortality reached 24% starting from 1990. In OECD countries, the reduction in mortality was first observed in young women and, to a lesser extent in women of middle age and women of older age groups has continued to grow in mortality from breast cancer [5-8]. Experts believe that detection of tumors at earlier stages plays a major role in reducing mortality in young women [9-11]. Currently, studies conducted on the effectiveness of screening in different countries (USA, Sweden, Holland), it is proven that mammography screening can reduce mortality from breast cancer [9-11].

The mortality rate from breast cancer by OECD countries - 35 averaged 24.9 on 100 thousand of women in 2015, and showed variations from 21.6 on 100 thousand of women in Finland until 32.9 on 100 thousand of women in Ireland. In Kazakhstan the death rate from breast cancer - 21.9 per 100 thousand women, the rate was not higher than in OECD countries (OECD 35:24,9). For a more accurate estimate of mortality, it is necessary to study the mortality from breast cancer by stage and age. It should be noted that in the OECD die in the older age category, and according to the Institute of Oncology and Radiology in Kazakhstan, 43% in mortality from cancer in the working age [3].

5-year survival in the diagnosis of breast cancer. In recent years the projections of the survival rates significantly increased worldwide. Statistics of breast cancer in the world [5-6] shows that the five-year survival rate is the highest in Costa Rica (91.2%), in the USA (90.2%), in Australia (89.5%), in Japan (89.4%), in Iceland (89.1%), on average in the countries of the OECD (31 countries) - 85%. These high figures due to the timely detection of tumor and the availability of timely high quality care, but it is worth noting that in the absence of treatment five-year survival less than 15% [4]. Lower indicators 5-year survival was noted in India (66.1%), Russia 70.8%, in Colombia 72.1%, in Chile 75.5%. In Kazakhstan, the 5-year survival rate is much lower than in developed countries and is only 51.4% [4].

The incidence of malignant neoplasms of the breast and mortality from in certain countries in 2012
(per 100,000 female population, data GLOBOCAN 2012-2017,
Health at a Glance 2017: OECD Indicators for 2012-2017)

Countries	Incidence of per 100 thousand women	Mammography screening (data for 2015, % of women 50-69 years in the OECD)	Mortality (per 100 thousand women)	5-year survival rate with breast cancer
Kazakhstan*	63,0	70% of women 50-60 years of age in RK	18,1	51,4
Kazakhstan ****	73,5	70%	21,9	51,4
Ukraine	41,3			
Belarus	45,9			
Russian Federation	45,6		26,9	70,8
Latvia	52,0	34,9	26,9	76,5
Lithuania	49,0		16,3	
Australia	86,0	54,2	22,5	89,3
Austria	68,0	72,7	26,1	84,8
Belgium	112,0	59,0	30,6	86,4
UK	95,0	75,1	29,1	85,6
Hungary	55,0	47,0	31,5	
Germany	92,0	54,2	28,8	86,0
Greece	44,0	59,6	25,2	
Denmark	105,0	83,9	31,4	86,1
Israel	103,0	70,8	29,5	88,0
Ireland	92,0	74,7	32,9	82,0
Spain	67,0	79,8	19,7	85,4
Italy	91,0	55,0	26,7	86,0
Iceland	59,0	59,0	32,5	89,1
Canada	80,0	72,0	25,0	88,2
Latvia	52,1	34,9	28,5	82,2
Luxembourg	89,0	54,2	28,1	
Mexico	35,0	18,1	15,0	
Netherlands	99,0	79,4	31,4	86,6
New Zealand	85,0	71,8	27,0	87,6
Norway	73,0	75,3	22,2	87,7
Poland	52,0	58,6	25,5	76,5
Portugal	67,6	84,2	22,4	87,6
Slovakia	58,0	23,2	29,0	75,5
Slovenia	67,0	81,4	29,9	83,5
USA	93,0	79,5	25,0	90,2
Turkey	40,8	31,0	13,9	82,1
Finland	89,0	82,7	21,6	88,5
France	90,0	51,9	27,0	86,7
Czech Republic	70,0	61,5	23,3	81,4
Chile	35,0	35,0	18,6	75,5
Switzerland	83,0	47,4	25,3	86,2
Sweden	80,0	90,4	22,1	83,8
Estonia	52,0	50,8	25,4	63,6
South Korea	70,3	66,8	8,2	78,1
Japan	85,9	41,0	14,1	87,3
OECD		OECD (33): 60,8 Source: OECD Health Statistics 2017 and EHIS Turostat database	ОЭСР (35):24,9 Source: OECD Health Statistics 2017	ОЭСР(31):85. Source: CONCORD Programme, London School of Hygiene and Tropical Medicine

The role of mammographic screening (MG) in the world. One of the most effective methods of combating chronic non-communicable diseases (chronic noninfectious diseases), and malignant neoplasms are the screening program for early detection of chronic noninfectious diseases and oncopathology. Currently, the standard when conducting screening programmes for breast cancer remain mammography and physical examination of the mammary glands, and these methods complement each other. However, the data reviewed showed that the world is ambiguous approach to the mammography screening and breast self-examination. According to studies and scientific publications, in all countries, one of the major problems of MG screening breast cancer is the fact that about 75% of the formations were identified as a result of screening, in the future, according to biopsy prove to be benign. Another problem is that about 20% of tumors, this method does not detect. Such tumors are fast-growing and deep-seated tumors in breasts with high density [12]. Also a big role in the diagnosis is played by a mammographic sensitivity of the method. The sensitivity of MG in women is in direct proportion to the density of the breast. With increased density of the gland, the sensitivity of screening mammography is reduced from 98 to 55% [12]. The sensitivity of the method of self-examination decreases with age: 41% for women 35-39 years and 21% for women 60-74 years [13].

Screening for breast cancer is held in Kazakhstan since 2008 and covers women who are not consisting on the dispensary account at the age of 50-60 years old, unlike OECD countries that age restricted to 60 years old (in OECD countries 50-69 years). The annual coverage is 400 thousand women – 70% of the subject population, slightly lower than in OECD countries (recommendation 2006 OECD in coverage of about 75%, 472 women have to suffer MG-survey annually to detect breast cancer one woman) [14]. The detection rate ranged from 0.10% in 2010 to 0.19% in 2015 in 2016 reached European recommendations (0.2-0.3%) – 0.23% [3]. The rate of detection of breast cancer at stage I, 39% in 2016, which is below the recommended European guidelines. **There have been some positive results:** morbidity and mortality from malignant neoplasms, compared to 2015, has decreased (report of the MH RK at the end of 2016). However, the five-year survival rates for screening breast cancer in the Republic of Kazakhstan is 50.2% and in OECD – 91%. **While in dynamics for ten years, screening breast cancer survival rate from cancer has not improved nearly** [1]. We have previously stressed the importance of reducing mortality from breast cancer. In the structure of all malignancies in the Republic of Kazakhstan, the share of BC in 2015 amounted to 12.1% (1 rank position in 2011), the ratio of mortality to incidence is 35.4% (in developed countries of Europe, USA, Korea – up to 15%). Epidemiological data indicate a trend of growth of this class of diseases in the RK and in the developed world.

Summary and conclusions. Breast cancer represents a major public health problem in RK because of the high mortality and mortality of women in the prime working ages. Over a 10-year period of implementation of screening, there is an increasing incidence of breast cancer (73.5 per 100 thousand women), by increasing the detection of breast cancer, and in 2016 at screening. The rate of detection of breast cancer at stage I - 39% in 2016, which is below the recommended European guidelines. The analysis showed that there is no positive dynamics in reducing mortality (the death rate from breast cancer in Kazakhstan amounted to 21.9 per 100 thousand women, 43% die in working age). Despite the increase of the detection, there is no positive dynamics in increasing 5-year survival rates (in OECD countries 91.0%, in Kazakhstan – 50.2%). The structure of population mortality does not change, 2011 deaths from cancer is on the second place.

REFERENCES

- [1] OECD (2017), “Cancer incidence”, in Health at a Glance 2017: OECD Indicators, OECD Publishing, Paris.
- [2] Analytical material of the expanded board of the MOH RK, March 3, 2017 / official website MOH RK.
- [3] Zhilkaidarova A.Z. Estimation of dynamics of indicators of morbidity and mortality from breast cancer in Kazakhstan during 2004-2014 // Journal SRIOR MOH RK, 2014 No.1.
- [4] Health at a Glance 2017: OECD Indicators for 2012-2017//
- [5] Data source: GLOBOCAN 2017 /Graph production: IARC (<http://gco.iarc.fr/today/>)
- [6] WWHO (www.who.int/healthinfo/en/)orld Health Organization/
- [7] Wang Z. Mammography and Beyond: Building Better Breast Cancer Screening Tests. J NCI Cancer Spectrum 2003;95(5): 344–6/
- [8] Tyczynski J.E., Plesko I., Aareleid T. et al. Breast cancer mortality patterns and time trends in 10 new EU member states: mortality declining in young women, but still increasing in the elderly.1: Int J Cancer 2004; 112(6): 1056–64
- [9] Chamberlain J. Aninsur ancepolicy to reduce the risk of dying from breast cancer. Clinical Radiology 1989; 40:1–3.

- [10] Collette H.J., Day N.E., Rombach J.J., de Waard F. Evaluation of screening for breast cancer in a non-randomized study (the DOM project) by means of a case-control study. *Lancet* 1984; 1(8388):1224-6. Day N.,
[11] Baines C., Chamberlain J. et al. UICC project on screening for breast cancer. *Int J Cancer* 1986; 38:303-8
[12] Silva O.E., Zurrada S. *Breast Cancer a Practical Guide*, 2005, 54-5.
[13] O'Malley M.S., Fletcher S.W. Screening for breast cancer with breast self-examination. *JAMA* 1987; 257:2197-203.
[14] *Cancer Epidemiol Biomarkers Prev*. 2006 Jan; 15(1):45-51.

**Т. Хайдарова¹, А. Ж. Жилкадайдарова², Г. Ә. Құрманғалиева²,
Б. Ш. Әбілқасымов², С. С. Берікболова³**

¹әл-Фараби атындағы Қазақ ұлттық университеті, Алматы, Қазақстан,

²ҚР ДСМ Онкология және радиология ғылыми-зерттеу институты, Алматы, Қазақстан,

³Алматы облыстық онкологиялық диспансері, Талдықорған, Қазақстан

СҮТ БЕЗІНІҢ ҚАТЕРЛІ ІСІГІН АНЫҚТАУДЫҢ САПАЛЫҚ КӨРСЕТКІШТЕРІН ТАЛДАУ

Аннотация. Қазақстан Республикасында сүт безі қатерлі ісігінің скринингі 2008 жылдан бастап жүзеге асырылады, бірақ талдау Қазақстанда сүт безі қатерлі ісігінің скринингі сапасының көрсеткіштері төмен, сүт безі қатерлі ісігінен өлім-жітімді төмендетуде, сүт безі қатерлі ісігінің 5 жылдық өмір сүруінде оң динамика жоқ. *Зерттеу мақсаты.* Қазақстан Республикасы мен Экономикалық ынтымақтастық және даму ұйымының елдерде (ЭБІДҰ) сүт безі қатерлі ісігінің сапа көрсеткіштерінің (сырқаттанушылық, өлім-жітім, 5-жылдық өмір сүру) скрининг салыстыру. Жұмыста сүт безінің қатерлі ісігінің көрсеткіштерін, өлім-жітім мен сүт безінің қатерлі ісігінен, 5 жыл өмір сүру арқылы статистикалық талдау әдістері 35 ел үшін пайдаланылды. Сүт безінің обырын скрининг индикаторлары бойынша деректердің көздері әлемдік және еуропалық онкологиялық аурулардың дерек қоры болды: Globocan 2012-2017, және Health at a Glance 2015-2017: OECD Indicators за 2012-2017 гг., және МЗРК, МНЭ РК, НИИ ОиР МЗРК. Зерттеу нәтижелері: скринингі енгізудің 10 жылдық кезеңінде сүт безі қатерлі ісігінің (100 мың әйелге шаққанда 73,5) сырқаттанушылықтың өсуі атап өтілді. Бірінші кезеңде сүт безінің қатерлі ісігін анықтау деңгейі 2016 жылы 39%-ды құрады, бұл ұсынылған еуропалық ұсыныстардан төмен (70%). Талдау өлім-жітімін (Қазақстан Республикасындағы сүт безі ісігінен өлім деңгейі 21,9 - 100 мың әйелдер, олардың ішінде 43% жұмыс жасында өледі 43%), және ЭБІДҰ елдерінде 5-жылдық өмір сүру -91,0%, Қазақстан Республикасында - 50,4%. Халықтың жалпы өлімінің құрылымы өзгермейді, 2011 жылдан бастап онкологиялық аурулардан өлім деңгейі екінші орында тұр.

Түйін сөздер: сүт безі қатерлі ісігінің скринингі, ЭБІДҰ-ны, ауру-сырқау, өлімдеңгейі, 5 жылдық өмір сүру.

**Т. С. Хайдарова¹, А. Ж. Жилкадайдарова², Г. А. Құрманғалиева³,
Б. Ш. Абылқасымов⁴, С. З. Берікболова⁵**

¹профессор, д.м.н. КазНУ им. аль-Фараби, Қазақстан,

²руководитель отдела КазНИИ ОиР МЗРК, Қазақстан,

³магистр по специальности «Менеджмент в здравоохранении» ВКО, Қазақстан,

⁴врач-эксперт, клинический фармаколог, Алматинский региональный онкологический диспансер, Қазақстан

АНАЛИЗ ИНДИКАТОРОВ КАЧЕСТВА СКРИНИНГА РАКА МОЛОЧНОЙ ЖЕЛЕЗЫ

Аннотация. *Актуальность исследования.* Скрининг на выявление РМЖ в РК проводится с 2008 года, но анализ показал, что по индикаторам качества скрининга на РМЖ в РК не наблюдается положительной динамики по снижению смертности от РМЖ, 5-летней выживаемости при РМЖ. *Цель исследования:* провести сравнение индикаторов качества скрининга РМЖ (заболеваемости, смертности, 5-летней выживаемости) по Республике Казахстан и по странам ОЭСР. В работе использованы **методы статистического анализа** показателей скрининга РМЖ по заболеваемости, смертности и 5-летней выживаемости от РМЖ по 35 странам ОЭСР. Источниками данных по индикаторам скрининга РМЖ были мировые и европейские базы данных по онкологическим заболеваниям: Globocan 2012-2015 г, сборник Health at a Glance 2015-2017: OECD Indicators за 2012-2017 гг., также данные МЗРК, МНЭ РК, НИИ ОиР МЗРК. *Результаты исследования:* за почти 10-летний период внедрения скрининга отмечается рост заболеваемости РМЖ (73,5 на 100 тыс. женщин), за счет повышения выявляемости РМЖ. Уровень выявления РМЖ на I стадии составил 39% в 2016 г., что ниже рекомендуемых европейских рекомендаций (70%). Анализ показал, что нет положительной динамики в снижении смертности (смертность от РМЖ в РК составила 21,9 на 100 тыс. женщин, из них 43% умирают в трудоспособном возрасте) и в увеличении 5-летней выживаемости (в странах ОЭСР 91,0%, в РК – 50,4%). Не меняется структура общей смертности населения, с 2011 года смертность от онкозаболеваний находится на втором месте.

Ключевые слова: скрининг рака молочной железы, ОЭСР, заболеваемость, смертность, 5-летняя выживаемость.