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# Epidemiology of ovarian cancer in Kazakhstan (2013-2018)

Relevance: *According to Globocan 2018, ovarian cancer (OC) ranks 7th among all other cancers affecting women around the world. 295,414 new cases of OC were reported only in 2018. The incidence in Western Europe is low. The incidence in Latvia, Poland, Lithuania, Estonia, Russia, as well as in Kazakhstan is high. In 2018, ovarian malignancies ranked 8th (3.1%) in Kazakhstan among all malignant tumours.*

*At that, there are no clearly recognised preventative measures to ensure the early detection of OC. 70% of ovarian malignancies are detected at stage III-IV.*

The purpose of this study *was to conduct a comparative analysis and assessment of the dynamics of the prevalence of OC in the Republic of Kazakhstan in 2013-2018.*

Results: *The analysis of age-related OC incidence in Kazakhstan showed the presence of ovarian malignancies in all age groups, with a marked increase by the age of 65-69 years. The majority of patients were women of the working age.*

*Differences were found in the incidence rates by regions of the country. In the study period, the incidence was high in Qostanai, Pavlodar, and North Kazakhstan regions (northern part of the country) and Almaty. The incidence was below the national average in Atyrau, Jambyl, and South Kazakhstan regions (southern and western parts of the country). Recent years have witnessed a sharp increase in OC incidence in East Kazakhstan and Karaganda regions.*

Conclusion: *The analysis of OC prevalence in the Republic of Kazakhstan and by regions showed an increase in OC incidence. There is a marked increase in OC detection in the northern areas of the country and a decrease in the number of cases in the south.*

***Keywords:*** *ovarian cancer (OC), epidemiology, incidence, survival*

***Introduction:*** Worldwide, ovarian cancer (OC) is the 7th most common cancer in women and has a five-year survival rate below 45%. Over 240,000 women are diagnosed with the ovarian disease worldwide each year. The mortality is the highest in Northern, Central and Eastern Europe, intermediate – in North America, Australia and Western Europe, and low – in Asia and Africa [1].

Indicators also vary by ethnicity. For example, in the United States, the indicators for non-Hispanic White women are approximately 30 % higher than for African-American and Asian women, and 12% higher, than for Hispanic women [2].

OC rarely affects women below 40 years old; the risk of developing this cancer increases with age [3]. Until the age of 40, most tumours are granulosa cell; after 40 years, more than 90% of tumours are epithelial.

OC epidemiology studies were carried out in different regions of the world. They took into account different factors and investigated the relation of OC morbidity and mortality with somatic pathology, genetic, hormonal, dietary, morphometric, socio-demographic, and other factors. The reasons and mechanisms for OC development are not fully disclosed yet.

The problem of OC epidemiology is extremely acute for the Republic of Kazakhstan due to the significant prevalence of this disease among the female population, the still high level of neglected cases, and high mortality.

***The purpose of this study*** was to conduct a comparative analysis and assessment of the dynamics of OC prevalence in the Republic of Kazakhstan in 2013-2018.

***Materials and methods:*** Global epidemiological data on OC was analysed based on the materials provided by Globocan 2018 by IARC. Main statistical indicators for the regions of Kazakhstan were taken from the Cancer Register of the Republic of Kazakhstan for 2013-2018.

***Results and discussion:*** Epidemiological data from Globocan 2018 shows significant differences in OC incidence by country (per 100,000 women): from 3.8 in Central Africa to 11.9 in Central and Eastern Europe [1]. Western Europe has a low OC incidence. The incidence in Kazakhstan is high, same as in Latvia, Poland, Lithuania, Estonia, and Russia. At that, WHO and Globocan 2018 forecasts are lower than in the Cancer register of Kazakhstan.

Mortality indicators also greatly differ in Globocan 2018 forecasts and real data from the Cancer register: 9.4 and 6.1 per 100 000 of the female population, respectively. This is due to the outstripping growth of morbidity and a decrease in mortality from this disease over the past decade [1].

As of 2018, OC ranks 7th in the world among oncological diseases in women (240 000 new cases of OC are registered annually) [2]. In women older than 40 years, especially in developed countries, OC is the second most common cancer after breast cancer [3]. OC is the 5th leading cause of cancer death in women and has the highest mortality among gynaecological cancers [4].

Despite the awareness about OC, treatment and survival rates have not changed much in the previous five years. Early diagnostics is still complicated due to the absence of

a specific screening and subclinical nature of symptoms which masquerade as other diseases [5].

The Republic of Kazakhstan alone accounts for more than 1,000 new cases of OC a year and more than 400 deaths from the disease [5]. In the US, they register more than 22 000 new case and 14,000 deaths from OC a year [6, 7].

In Kazakhstan, malignancies of the ovaries rank 3rd among all gynaecological cancers. The analysis of coarse intensive OC incidence shows an increase in the detection rate in 2013-2018 [8-10].

The incidence differs by regions of the Republic of Kazakhstan. In 2013-2018, it was high Qostanay, Pavlodar, and North Kazakhstan regions (the north of the country) and the city of Almaty. The lowest incidence (below the national average) was registered in Atyrau, Zhambyl, and South Kazakhstan regions (the south and the west of Kazakhstan). Over recent years, the OC incidence has sharply increased in the East Kazakhstan and Karaganda regions.

The analysis of age-related incidence shows the prevalence of malignancies of the ovaries in all age groups, with a marked increase at the age of 65-69 years. Most of the patients are women of the working age. In five years under study (2013-2018), the incidence among children and adolescents (the age group of 5 to 19 years) has decreased from 5 OC cases in 2014 to one case in 2019. Over the last decade, there is an increase in incidence at the age of 55 to 65 years [5].

***Conclusions:*** OC incidence and mortality remain an acute epidemiological problem in Kazakhstan and require further research to identify the risk factors. In the Republic of Kazakhstan, some regions exceed the national average. In these regions, it is necessary to more widely apply modern methods of early diagnostics and treatment of OC.

Earlier detection of OC allows for obtaining significant treatment outcomes. The main objectives of OC epidemiology are the continuation of in-depth studies of OC prevalence in the regions of the Republic of Kazakhstan with the identification of population groups and regions with the lowest and highest rates of OC morbidity and mortality.

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