OVARIAN CANCER INCIDENCE AND MORTALITY IN THE CITY OF ALMATY, 2014-2023

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ABSTRACT

Relevance: According to the National Cancer Registry of Kazakhstan, the incidence of ovarian cancer in Almaty in 2023 was 18.3 per 100,000 women, and the mortality rate was 3.9 per 100,000 women. The overall survival rate for ovarian cancer (OC) in Almaty in 2023 was 53.7%. Currently, Almaty is among the regions with a high incidence of cancer and mortality.

The study aimed to assess changes in the incidence and mortality of OC among Almaty residents and the five-year survival of patients with OC from 2014 to 2023.

Methods: The changes in the structure and dynamics of morbidity and mortality from OC in Almaty over ten years (2014-2023) were analyzed based on the official accounting and reporting documentation. Statistical information processing was carried out using the SPSS software, version 23.0.

Results: From 2014 to 2023, the incidence rate increased from 14.2 to 18.3 per 100,000 women, while the mortality rate remained consistently low, at 3.9 per 100,000 women in 2023. In 2014, 127 cases of ovarian cancer were detected, of which 44.8% were at stages I and II of the disease. In 2023, 228 cases of ovarian cancer were registered, with stages I and II accounting for 52.2%.

The frequency of new cases has significantly increased in recent years, starting at 50-54 years old and peaking at 55-59 years old. The highest incidence of OC shifted from 50-54 years old in 2014 to 55-59 years old in 2023.

Conclusion: The study demonstrated significant advancements in diagnosing and treating ovarian cancer in Almaty, including reduced mortality rates and a higher proportion of early detections. However, further improvements in diagnostic methods, enhancing oncological awareness among primary care physicians, and increasing the average life expectancy of Almaty residents remain key priorities.

Keywords: ovarian cancer, incidence, mortality, Almaty.

Introduction: According to Globocan 2020 statistical data, ovarian cancer (OC) is the eighth most common malignant disease among women and remains one of the leading causes of mortality in the field of gynecology [1]. In 2020, 313,959 new cases were reported, with 80% of cases being detected in the late stages of the disease, which worsens the prognosis [1]. Despite the development of surgery and chemotherapy, the 5-year survival rate remains as low as about 40% [2]. Further increases in incidence (up to 371,000 new cases) and mortality (up to 271,000 cases) are expected [1], emphasizing the need for a personalized approach to treatment.

About 1,000 new OC cases are registered in Kazakhstan annually, 2.9% of all cancer cases. The number of cases has increased by 21% in the last 15 years, and the mortality rate is 4.7 per 100,000 women. There is no routine testing for BRCA1 and BRCA2 gene mutations in the country yet, although their detection could significantly affect the treatment and prognosis of the disease [3].

OC is one of the most aggressive malignant diseases of the female reproductive system. High mortality is associated with late diagnosis, resistance to chemotherapy, and frequent relapses. Effective diagnostic methods, screening, and personalized approaches are needed to improve survival [4]. Standard treatment includes surgical removal of the tumor and chemotherapy with platinum drugs. However, the lack of reliable prognostic biomarkers makes it difficult to choose the optimal strategy [5]. Modern genetics and molecular profiling research has led to new therapies to reduce relapses and side effects. Genetic testing for BRCA1/2 mutations has already become the standard for patients with epithelial OC. It allows for selecting individualized therapy and improving prognosis [6].

Maintenance therapy with PARP inhibitors, bevacizumab, and drugs affecting homologous recombination deficiency is becoming more common. In parallel, actively developing immune therapy opens up new treatment options [7]. According to the 2020 WHO classification, OC is a heterogeneous group of tumors, 90% of which are epithelial tumors. Among them, high-grade serous carcinoma (HGSC) is the most common and aggressive, accounting for 70% of all cases [8].

OC is the third most common cancer in women after breast and lung cancer [9]. This emphasizes the need for further study of the disease and the search for more effective methods of diagnosis and treatment.

The study aimed to assess changes in the incidence and mortality of OC among Almaty residents and the five-year survival of patients with OC from 2014 to 2023.

Materials and Methods: The analysis of changes in the structure and dynamics of OC incidence and mortality in the city of Almaty for the ten years (2014-2023) was carried out based on official accounting and reporting documentation data. The object of the study was 1,472 women who newly diagnosed with OC during the specified period. The source of data was the control cards of case follow-up (account form 030-6/u).

Data from the International Classification of Diseases 10th revision (ICD-10) on tumor localization, information from the National Cancer Registry (Electronic Register of Cancer Patients) on malignant neoplasms, official reports of oncology centers of the Republic of Kazakhstan, including the Report on Malignant Neoplasms Diseases (account form No. 7) for 2014-2023, as well as cards of patients firist diagnosed with malignant neoplasms (account form 090/U) were used for epidemiological analysis. Additional-ly, the data of the Agency of the Republic of Kazakhstan on demographic indicators, including the number and sex-age structure of the population of Almaty for the study period, were analyzed.

Results: When analyzing crude and intensive markers of OC incidence, a tendency to increase the frequency of registration of this disease from 2014 to 2023 was revealed (Figure 1). The analyzed statistical data confirms the International Agency for Research on Cancer's forecasts predicting a global increase in new OC cases [10]. In 2014, the incidence was 14.2 cases per 100,000 women, while by 2023, the rate had increased to 18.3 per 100,000. The maximum incidence level was registered in 2023, with 18.3 cases per 100,000 female population. According to the National Cancer Registry, 228 new cases were identified in Almaty in 2023. At the same time, OC mortality has decreased during the study period. Sixty-one fatal cases registered in 2014 corresponded to a rate of 6.8 per 100,000 women. In 2023, this rate decreased to 3.9 per 100,000, with 49 deaths (Figure 1).
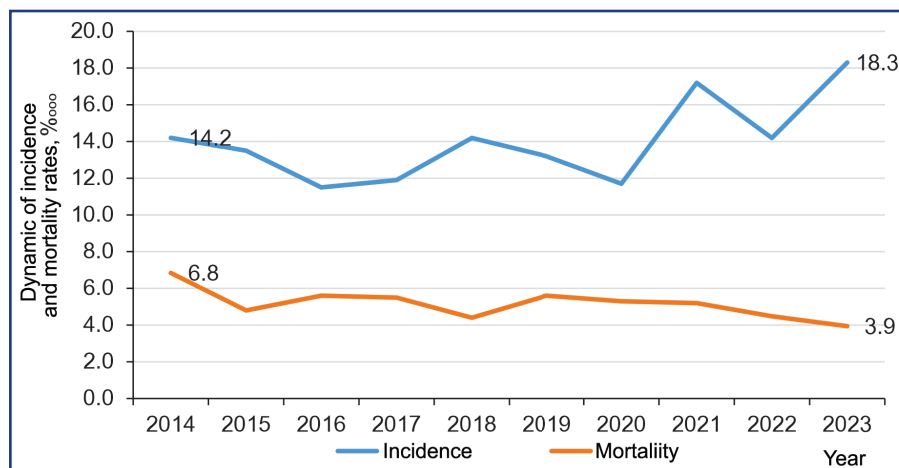

Figure 1 – Dynamics of ovarian cancer incidence and mortality in Almaty (2014-2023) per 100,000 female population

Analysis of registration of new ovarian cancer cases in different age groups revealed an increase in incidence among middle-aged and older women in 2023 compared to 2014 (Figure 2). A significant rate increase is associated with expanded diagnostic capabilities and life expectancy in Kazakhstan [11].

The increasing incidence of OC among middle-aged and older women emphasizes improving diagnostic measures and strengthening surveillance during periodic health examinations in outpatient clinics (Figure 2). Analysis of the age distribution of cases for 2014 and 2023 (absolute indicators) showed an increase in newly detected cases in those age groups. Stage analysis at diagnosis showed a tendency for more frequent detection of OC at stages I and III during the analyzed period (Figures 3 and 4). In 2014, 127 OC cases were registered, with 44.9% of patients having stage I-II disease. In 2023, the number of cases increased to 228, and the share of Stages I-II cases was 52.2%. Stage III was registered in 49.6% of detected cases in 2014 and 44.3% in 2023. The frequency has doubled for Stage I cases at diagnosis and increased by half for Stage III cases. At that, the number of neglected cases (stage IV at detection) has not significantly increased.

Table 1 presents key statistical indicators reflecting the effectiveness of oncologic care for OC patients in Almaty. The number of new cases increased by 228 (55.7%) in 2023 compared to 2014. In 2023, morphologic confirmation of the diagnosis was obtained in 53.9% of cases. According to the Cancer Registry, 52.2% of the cases were detected early, while 49.5% were diagnosed during periodic health examinations. During the analyzed period, early detection rates have increased significantly due to improvements in diagnostic methods and increased oncological vigilance among primary care gynecologists. In addition, one-year ovarian cancer mortality decreased to 5.7% in 2023 compared to 14.1% in 2014, showing a positive trend and

a more than twofold reduction of this rate. This achievement is connected with the introduction of modern diagnostic methods, improved treatment quality, and new therapeutic approaches. In 2023, the number of patients under observation increased to 1,257, with 53.7% registered for 5 years or more.
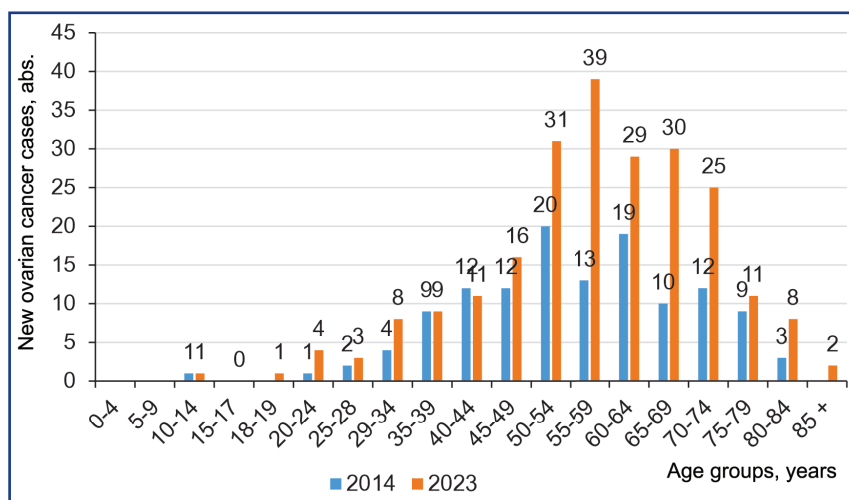

Figure 2 – Number of new ovarian cancer cases in different age groups in 2014 and 2023 (absolute indicators)
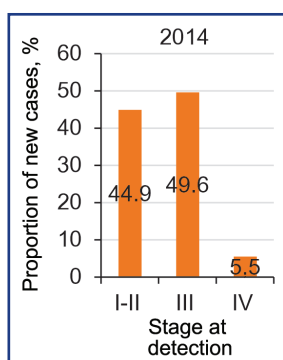

Figure 3 – Distribution by stage of specific weight of first diagnosed ovarian cancer cases in Almaty women in 2014 (%)
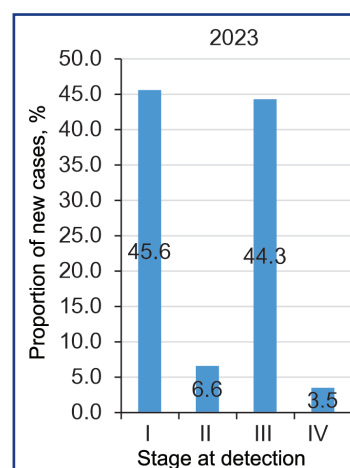

Figure 4 – Distribution by stage of first diagnosed ovarian cancer cases in Almaty women in 2023 (%)

Table 1 – Dynamics of statistical indicators of ovarian cancer incidence and mortality in Almaty (2014 and 2023)

Indicators	2014	2023
New cases, n	127	228
Morphologically verified diagnosis, % (n)	89,7 (114)	53.9 (123)
Cases diagnosed at stages I and II, % of detected cases	44.8	52.2
Incidence (crude intensive rate) per 100,000 population	14.2	18.3
Mortality (crude intensive rate) per 100,000 population	6.8	3.9
Diagnosed at stage III, % of detected cases	49.6	44.2
Detected at stages I and II during periodic health examinations, n (new cases)	0.78 (1)	49.5 (113)
Survivors for less than one year after diagnosis, among those registered in the previous year (one-year mortality), n (%)	14.1 (18)	5.7 (13)
Number of registered by the end of the year, n	690	1257
Number of patients on record for 5 years or more, n	354	676

Discussion: Over the past 10 years, there has been an increase in ovarian cancer incidence in Almaty. The incidence rate increased from 14.2 per 100,000 female population in 2014 to 18.3 per 100,000 female population in 2023. This trend is connected with the improvement of diagnostic methods, increased oncological vig-

ilance of primary care gynecologists, and the increase in the average life of Almaty residents. Despite the lack of justified screening programs to detect ovarian cancer, early diagnosis using preferred methods such as ultrasound plays a key role in detecting ovarian cancer at early stages [12].

In contrast, OC mortality has decreased from 6.8 cases per 100,000 females in 2014 to 3.9 in 2023. This could be due to the introduction of modern treatment methods, including chemotherapy and targeted therapy, and the increasing availability of medical care.

OC is the sixth in the structure of female cancer incidence in Almaty. Over the last 10 years (2014-2023), 1,472 new cases and 534 deaths caused by this pathology were registered.

The growing number of reported OC cases in middle and elderly age indicates the need to strengthen preventive measures in these age groups. Older women should be especially monitored because the risk of OC developing increases with age. For 2023, the maximum OC incidence has shifted from age 50-54 years to age group 55-59 years compared to 2014.

A positive trend during the analyzed period was an increased early detection of patients with OC stages I and II, from 44.8% in 2014 to 52.2% in 2023. The increase in stage I diagnosis is particularly notable, indicating progress in early disease detection. At the same time, the proportion of patients with stage III and neglected stage IV has decreased from 49.6% in 2014 to 44.2% in 2023. This suggests that women are increasingly seeking medical attention earlier in the disease process.

The factors that influenced the results are improved diagnostics by introducing modern imaging techniques such as computed tomography (CT) and magnetic resonance imaging (MRI), as well as laboratory tests.

Ovarian cancer remains one of the most challenging problems in oncology due to the lack of pronounced symptoms at the early stages. Increased doctors' vigilance has played a significant role in improving the detection and treatment of the disease and creating an environment that encourages women to take a conscious and responsible approach to preventive examinations. Improving the medical system, including the availability of oncology centers, introducing modern technologies, and improving the quality of medical care have also become important aspects. Improvement of ovarian cancer diagnosis and treatment methods, including the use of modern technology and personalized therapy approaches, is needed to further improve the situation. The population should also be actively informed about this disease's early signs and risk factors to increase the likelihood of timely detection.

Conclusion: The study's results indicate significant progress in improving the diagnosis and treatment of ovarian cancer in Almaty. This has reduced mortality rates and increased the proportion of cases detected at early stages. However, the task of further improvement of preventive measures, introduction of more accurate and accessible diagnostic methods, and increase in oncologic vigilance among primary care gynecologists remains relevant. These steps aim to improve patients' quality of life and increase duration.

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АҢДАТПА

2014-2023 ЖЫЛДАРДАҒЫ АЛМАТЫ ҚАЛАСЫНДАҒЫ АНАЛЫҚ БЕЗДІҢ ҚАТЕРЛІ ІСІГІМЕН СЫРҚАТТАНУШЫЛЫҚ ЖӘНЕ ӨЛІМ-ЖІТІМ

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Өзектілігі: *Ұлттық канцер-тіркелімнің деректері бойынша Алматы қаласында (Қазақстан) аналық бездің катерлі ісігімен (АБҚІ) сырқаттанушылық деңгейі 2023 жылы 100 000 әйелге шаққанда 18,3, өлім — жітім деңгейі 100 000 әйелге шаққанда 3,9 құрайды. Алматыда 2023 жылы АБҚІ-мен өмір сүрудің жалпы деңгейі 53,7%-ды құрады. Қазіргі уақытта Алматыда АБҚІ-нен сырқаттанушылық пен өлім-жітім деңгейі жоғары өңірлердің бірі болып табылады.*

Зерттеу мақсаты: *Алматы тұрғындары арасында АБҚІ-мен сырқаттанушылық пен өлім-жітім деңгейінің өзгеруін, сондай-ақ 2014-2023 жж. осы диагнозы бар пациенттердің бес жылдық өмір сүру көрсеткіштерін бағалау.*

Әдістері: *Алматы қаласында он жылдық кезеңдегі (2014-2023 жж.) сырқаттанушылық пен өлім-жітімнің құрылымы мен динамикасындағы өзгерістерді талдау есепке алу-есеп беру құжаттамасының деректері негізінде жүргізілді. Ақпаратты статистикалық өңдеу SPSS 23.0 бағдарламалық жасақтамасын қолдану арқылы жүзеге асырылды.*

Нәтижелері: *2014-2023 жылдары 100 000 әйелге шаққанда 14,2-ден 18,3-ке дейін сырқаттанушылық деңгейінің өсуі байқалды, бұл ретте өлім-жітім деңгейі тұрақты төмен болып қалады және 2023 жылы 100 000 әйелге шаққанда 3,9 құрайды. 2014 жылы АБҚІ-нің 127 жағдайы анықталды, оның 44,8%-ы аурудың I және II сатыларында болды. 2023 жылы АБҚІ-нің 228 жағдайы тіркелді, оның I және II кезеңдері 52,2% құрады.*

Соңғы жылдары 50-54 жас тобынан бастап 55-59 жас тобында ең көп кездесетін АБҚІ-нің жаңа жағдайларын тіркеу жиілігінің айтарлықтай өсуі байқалды. 2023 жылы 2014 жылмен салыстырғанда АБҚІ-нің ең жоғары деңгейі "50-54 жас" тобынан "55-59 жас" тобына ауысты.

Қорытынды: *зерттеу нәтижелері Алматы қаласында АБҚІ диагностикасы және емдеу жөніндегі іс-шаралардың жақсаруы елеулі жетістіктерге: өлім-жітімнің төмендеуіне және аурудың ерте сатысында анықталған жағдайлардың үлесінің ұлғаюына әкелгенін көрсетеді. Алайда диагностика әдістерін жетілдіру, алғашқы медициналық-санитарлық көмек дәрігерлерінің онкологиялық қырағылығын арттыру, сондай-ақ Алматы қаласы тұрғындарының орташа өмір сүру ұзақтығын арттыру маңызды міндеттер болып қала береді.*

Түйінді сөздер: *аналық бездің катерлі ісігі (АБҚІ), сырқаттанушылық, өлім-жітім, Алматы.*

АННОТАЦИЯ

ЗАБОЛЕВАЕМОСТЬ И СМЕРТНОСТЬ ОТ РАКА ЯИЧНИКОВ В ГОРОДЕ АЛМАТЫ ЗА 2014-2023 гг.

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Актуальность: *По данным Национального канцер-регистра, уровень заболеваемости раком яичников (РЯ) в городе Алматы (Казахстан) на 2023 год составляет 18,3 на 100 000 женщин, уровень смертности – 3,9 на 100 000 женского населения. Общий уровень выживаемости при РЯ в Алматы на 2023 год составил 53,7%. В настоящее время Алматы является одним из регионов с высоким уровнем заболеваемости и смертности от РЯ.*

Цель исследования *– оценка изменений уровня заболеваемости и смертности от рака яичников среди жителей Алматы, а также показателей пятилетней выживаемости пациентов с данным диагнозом за 2014-2023 гг.*

Методы: *Анализ изменений в структуре и динамике заболеваемости и смертности от РЯ в городе Алматы за десятилетний период (2014-2023 гг.) проведен на основе данных учётно-отчётной документации. Статистическая обработка информации осуществлялась с применением программного обеспечения SPSS версии 23.0.*

Результаты: *В 2014-2023 гг. отмечен рост уровня заболеваемости с 14,2 до 18,3 на 100 000 женщин, при этом уровень смертности остаётся стабильно низким и в 2023 году составил 3,9 на 100 000 женщин. В 2014 году было выявлено 127 случаев РЯ, из которых 44,8% приходились на I и II стадии заболевания. В 2023 году зарегистрировано 228 случаев РЯ, причём на I и II стадии приходилось 52,2%.*

В последние годы отмечается значительное увеличение частоты регистрации новых случаев РЯ, начиная с возрастной группы 50-54 лет, с пиком в группе 55-59 лет. В 2023 году по сравнению с 2014 годом наибольший уровень заболеваемости РЯ сместился из возрастной группы «50-54 года» в группу «55-59 лет».

***Заключение:** Результаты исследования показывают, что улучшение мероприятий по диагностике и лечению РЯ в городе Алматы привело к значительным достижениям: снижению смертности и увеличению доли случаев, выявленных на ранних стадиях заболевания. Однако остаются важными задачами совершенствование методов диагностики, повышение онкологической настороженности врачей первичной медико-санитарной помощи, а также увеличение средней продолжительности жизни жителей города Алматы.*

***Ключевые слова:** рак яичников (РЯ), заболеваемость, смертность, Алматы.*

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