

RESEARCH COMMUNICATION

Epidemiology of Ovarian Cancer in Kyrgyzstan Women of Reproductive Age

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Abstract

The purpose of the present study was to assess the ovarian cancer incidence rate among women of reproductive age in Kyrgyzstan. Sources of data were records of all patients who were first diagnosed as suffering from ovarian cancer at reproductive age (15-49) during the period 1999-2006. Descriptive and analytical methods of onco-epidemiology were applied. It was established that the ovarian cancer incidence among general female population of reproductive age equaled 4.3 ± 0.3 per 100,000 population. Incidence rate was increasing in dynamics. Average age of patients in this category was 37.9 ± 0.5 . Analysis of age indicators demonstrated that incidence rate was higher within later reproductive age (40-49) at $11.2 \pm 0.60/0000$. Incidence among the two main ethnic population groups was analyzed: Kyrgyz and Russian. Whereas rates appeared to be increasing in the former, the latter demonstrated paradoxical decrease.

Key Words: Ovarian cancer – reproductive age – incidence rate – ethnic populations – Kyrgyzstan

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Introduction

Epidemiological studies of ovarian cancer have shown that the dissemination worldwide is not even (Parkin et al., 2003; Zaridze, 2001). According to data of the International Cancer Study Agency every year more than 200,000 new cases of ovarian cancer are registered in the world and more that 120,000 women die from ovarian malignant tumors. Of the total, 22.2% of new cases are registered among populations of reproductive age (15-44 years). Ovarian cancer incidence rate in general equals to 6.6, and in the age group 15-44 is 3.2 per 100,000 female population (IARC, 2004).

We have earlier documented in a series of papers differences in ethnic and local populations regarding oesophageal (Igisinov, 2002), breast and cervix (Igisinov, 2002) cancers in Kyrgyzstan. A link between altitude and cancer was further found (Igisinov et al., 2002). The incidence of gastric cancer also appears to reflect the climatic-geographical zone (Saenko, 1979). Change over time has further been described, dependent on the region and ethnic make up (Igisinov, 2005)

We here focused on ovarian cancer in the same central Asian country. Risk factors include ethnicity and patient age. Occurrence of cancers varies within different limits revealing reasons among various ethnic groups differing in traditions, habits and customs. Probability to have malignant tumors grows proportionally to age. However, age indicators in various parts of the world are different and differ from each other and conditioned by peculiarities of age structure, the higher in the structure of population

persons of elderly age, the higher is cancer incidence rate (Makimbetov et al, 2003). Here, the influence of ethnicity and age upon incidence of ovarian cancer among women of reproductive age in Kyrgyzstan is documented.

Materials and Methods

Documents of the National Oncology Center under the Ministry of Health of Kyrgyz Republic for patients who were, for the first time in their lives, diagnosed with ovarian cancer were used as data resources for the research. The period under study was 8 years (1996-2006); within this period, a total of 1,126 patients with ovarian cancer were registered, and this share of patients of reproductive age was 41.3% (465 patients). Data regarding female population from 1999 to 2006 (The Population of Kyrgyzstan, 1999) of the National Statistical Committee of the Kyrgyz Republic were used to assess incidence rates.

Using generally accepted methods of medical and biological statistics were estimated standardized (world standard) ovarian cancer incidences at reproductive age (15-49) for women of Kyrgyz, Russian ethnicity and general female population. Truncated standardization method proposed by Doll & Cook (Makimbetov et al, 2003) was applied for standardization. Defined were yearly average values with standard error, 95% confidence intervals (95% CI), average annual growth rates ($_gr$, %) (Merkov et al, 1974; Glantz, 1999). The following abbreviations were used: CR – crude rate, TSI – truncated standardized indicator, 0/0000 – per 100,000 population.

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Table 1. Age Structure of Patients of Reproductive Age with Ovarian Cancer in Kyrgyzstan (1999-2006)

Age, years	Ethnicity			
	Kyrgyz No. %	Russian No. %	Other No. %	All No. %
15-29	77 (25.1)	6 (7.8)	11 (13.6)	94 (20.2)
30-39	75 (24.4)	18 (23.4)	19 (23.4)	112 (24.1)
40-49	155 (50.5)	53 (68.8)	51 (63.0)	259 (55.7)
Total	307 (100)	77 (100)	81 (100)	465 (100)
%	66.0	16.6	17.4	100.0
Average	36.8±0.7	41.0±0.7	38.4±1.5	37.9±0.5

Table 2. Trends of Average Age of Women of Reproductive Age with Ovarian Cancer in Kyrgyzstan (1999-2006)

Ethnicity	Years								%*
	1999	2000	2001	2002	2003	2004	2005	2006	
All	38.4	38.3	38.1	38.0	37.8	37.7	37.5	37.4	-0.4
Kyrgyz	37.6	37.3	37.1	36.9	36.7	36.5	36.3	36.0	-0.6
Russian	41.2	41.2	41.1	41.0	41.0	40.9	40.8	40.8	-0.2

*Reduction

Results

For the researched period 465 patients of reproductive age with ovarian cancer in the Republic, among them the major group (82.6%) included women of Kyrgyz and Russian ethnicity. Age and ethnicity structure is displayed in Table 1. Average age of patients of Kryrgyz and Russian ethnicity was 36.8±0.7 and 41.0±0.7 accordingly, the difference being statistically significant (p=0.001).

In dynamics, at leveling of average age slight trend to «rejuvenation» could be noted. So, average annual drawdown rate was Tgr=-0.4%, and average age decreased from 38.4 in 1999 to 37.4 in 2006. This pattern was

established with women of both Kyrgyz and Russian ethnicity (Table 2). Average annual crude rate of ovarian cancer morbidity of total female population at reproductive age equaled to 4.3±0.30 /10⁵ (95% CI =3.7-4.9 /10⁵). In dynamics crude rate at leveling had up trend from 3.7 (1999) to 4.8 in 2006. Average annual growth rate equaled 3.7%.

The truncated standardized indicator of ovarian cancer incidence rate in general with women of reproductive age for the given period in Kyrgyzstan was higher than RI and equaled 4.6±10.30/0000 (95% CI =4.1-5.20/0000), and in dynamics increased (Tgr=+2.9%).

Average annual crude rate of ovarian cancer morbidity among women of reproductive age, equaled 4.4±0.40/ /10⁵ (95% CI=3.5-5.20/ 10⁵) among women of Kyrgyz ethnicity, and 5.5±0.50/10⁵ (95% CI=4.5-6.60/10⁵) with women of Russian ethnicity. Difference between indicators was statistically insignificant (p>0.05). In dynamics, ovarian cancer incidence rate among women of reproductive age of Kyrgyz ethnicity at leveling had the up trend (Tgr=+7.4%). Converse could be observed with women of Russian ethnicity since drawdown rate at leveling amounted 93.7% (Tgr=-6.3%). Truncated standardized indicator of incidence rate at reproductive age among women of Kyrgyz ethnicity was higher than rough indicator and amounted 5.3±0.50/0000 (95% CI=4.3-6.20/0000), and in dynamics at leveling increased (Tgr=+7.7%). Truncated standardized indicator of incidence rate at reproductive age among women of Russian ethnicity, was decreasing just as the rough one (Tgr=-6.0%), and average annual indicator amounted 4.7±0.50 /10⁵ (95% CI =3.8-5.60 /10⁵), i.e. was lower than rough indicator.

High average annual age indicators were established in late reproductive age. So, incidence rate among general female population at the age of 40-49 amounted 11.2±0.60

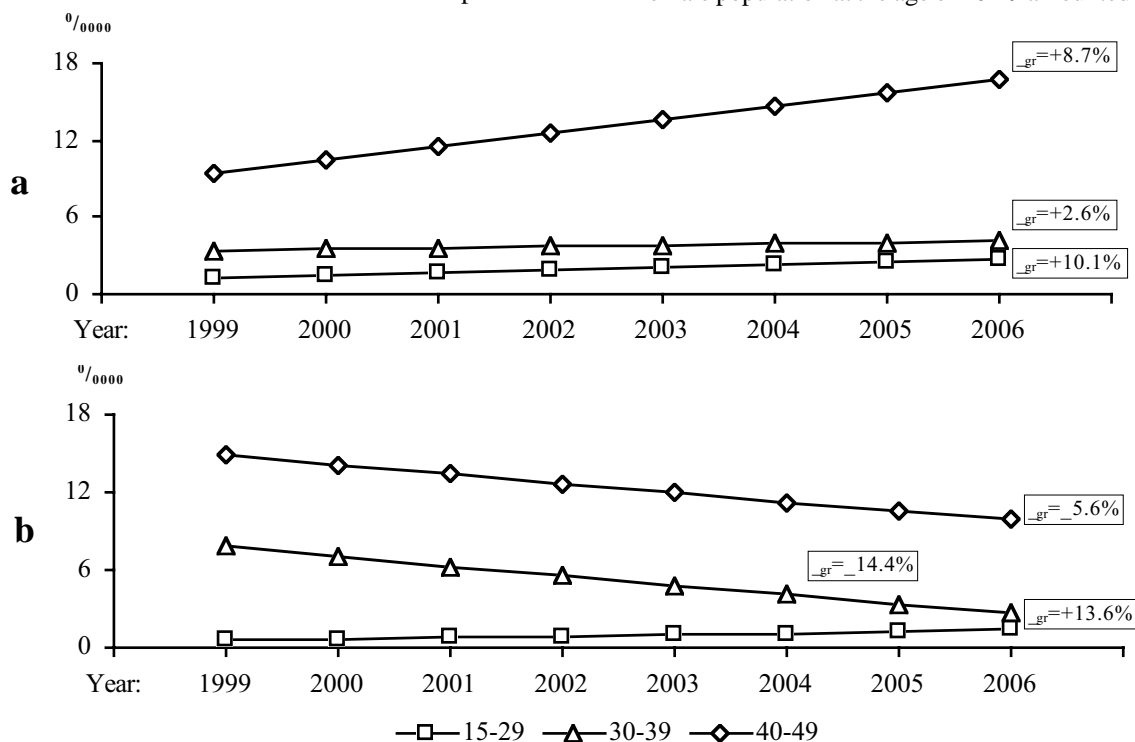


Figure 1. Change in Incidence Rates for Different Age Groups. a) Kyrgyz b) Russian

Table 3. Average Ovarian Cancer Incidence Rates among Women of Reproductive Age in Kyrgyzstan (1999-2006)

Age, years	Ethnicity		
	Kyrgyz	Russian	All
15-29	2.0±0.3 (1.4-2.6)	1.0±0.3 (0.4-1.6)	1.6±0.2 (1.2-2.1)
30-39	3.8±0.6 (2.6-5.0)	5.2±1.8 (1.7-8.7)	4.0±0.6 (2.9-5.0)
40-49	13.0±1.1 (10.8-15.2)	12.3±1.2 (10.1-14.7)	11.2±0.6 (10.1-12.2)
15-49	4.4±0.4 (3.5-5.2)	5.5±0.5 (4.5-6.6)	4.3±0.3 (3.7-4.9)

Table 4. Average Incidence Rates of Ovarian Cancer Among Women of Reproductive Age in Kyrgyzstan (1999-2006)

Oblast	RI	TSI
Batken	1.7±0.2 (1.3-2.1)	1.9±0.3 (1.3-2.4)
Jalalabad	3.3±0.7 (2.0-4.7)	3.7±0.8 (2.2-5.2)
Issykkul	5.8±0.9 (4.0-7.5)	6.0±0.9 (4.2-7.7)
Naryn	7.0±1.7 (3.7-10.3)	7.4±1.7 (4.0-10.8)
Osh	2.3±0.3 (1.7-2.9)	2.6±0.4 (1.9-3.3)
Talas	4.7±1.4 (2.0-7.4)	5.2±1.5 (2.3-8.2)
Chui	7.5±0.7 (6.1-8.9)	7.3±0.7 (6.0-8.7)
Bishkek	4.9±0.4 (4.1-5.6)	5.2±0.5 (4.4-6.1)
Total	4.3±0.3 (3.7-4.9)	4.6±0.3 (4.1-5.2)

/10⁵, at 30-39 – 4.0±0.60 /10⁵, and at 15-29 – 1.6±0.20 /10⁵ (Table 3). At this, difference in incidence rates in the indicated age groups is statistically significant (p<0.05). The above regularity was a characteristic for both – women of Kyrgyz and Russian ethnicity (Table 3).

In overall dynamics, leveled age indicators of ovarian cancer incidence rate among general female population had different trends. So, in age groups 15-29 and 40-49 indicators in dynamics were growing. Average annual growth rates amounted gr=+8.3% and gr=+3.0% accordingly. In age group 30-39 indicators had downward trend (gr=-0.4%).

Age indicators among women of Kyrgyz ethnicity in the dynamics had an upward trend. High growth rates were noted at the age group 15-29 (gr=+10.1%) and 40-49 (gr=+8.7%). In the age group 30-39 growth rates were lower (gr=+2.6%) (Figure 1a). High growth rates are also noted among women of Russian ethnicity in the age group 15-29 (gr=+13.6%). In other age groups leveled indicators of ovarian cancer incidence rate had downward trends (Figure 1b). At this high decrease rates were noted in the age group 30-39 (gr=-14.4%). In late reproductive age (40-49 years) decrease rates (gr=-5.6%). The above changes among women of Russian ethnicity, are likely to be related to migration processes in the Republic.

Ovarian cancer incidence rate among women of reproductive age was uneven in different regions of Kyrgyzstan. So, low average annual rough indicators of incidence were established in Batken – 1.7±0.20 /10⁵ (95% CI=1.3-2.10 /10⁵) and Osh – 2.3±0.30 /10⁵ (95% CI=1.7-2.90 /10⁵) oblasts, and high indicators in Naryn – 7.0±1.70 /10⁵ (95% CI=3.7-10.30/0000) and Chui – 7.5±0.70 /10⁵ (95% CI=6.1-8.90 /10⁵) oblasts, near the capital city of Bishkek. Incidence rates in other regions of the Republic had an intermediate position (Table 4).

Discussion

The present study revealed relatively high indicators of incidence were established at late reproductive age (40-49 years). So, among general female population it amounted 11.2±0.60/0000, among women of Kyrgyz ethnicity 13.0±1.10/0000 and among women of Russian ethnicity 12.3±1.20/0000. Ovarian cancer incidence trends were also high in the age group 15-29 years. However, this was most obvious among women of Russian ethnicity.

The change over time is of interest and it can be expected that ovarian cancer rates will increase in the Kyrgyz females in the future. However, the data from Russian females are difficult to interpret since there is an influence of outward migration. A similar difference between the two major ethnicities was earlier observed for breast cancer (Igisinov et al., 2005).

The variation in rates within the country might reflect economic conditions to some extent since the highest rates were observed in the most developed oblasts near the capital city, Bishkek. Whether there might be any influence of altitude, as suggested earlier for breast and lung cancer (Igisinov et al., 2002) remains to be clarified. This could of course be a reflection of greater economic development in the lower lying regions.

Revealing of regional peculiarities of ovarian cancer incidence among women of reproductive age in Kyrgyzstan with account to influence of various endogenous and exogenous factors will be priority for our future research.

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Ovarian cancer is one of the most aggressive reproductive cancers among women. The purpose of this review is to summarize epidemiological factors that contribute to the ovarian cancer risk. This review discusses relevant primary research articles, reviews, cohort studies, population-based studies, pooled data and meta-analysis on ovarian cancer epidemiology and summarizes the positive and negative risk factors for ovarian cancer development. Although the association between general obesity or body mass index and the ovarian cancer risk is inconclusive, central obesity could be a risk factor for ovarian cancer. Consumption of a diet rich in glutathione and other antioxidants, maintaining a healthy

Epidemiology of ovarian cancer in Kyrgyzstan women of reproductive age Asian Pacific Journal of Cancer Prevention. 2008 | journal-article. EID: 2-s2.0-59849119911. Source: Nurbek Igissinov via Scopus - Elsevier. Preferred source. Epidemiology of breast cancer in females of reproductive age in Kyrgyzstan Asian Pacific Journal of Cancer Prevention. 2005 | journal-article. EID: 2-s2.0-18444400556. Source: Nurbek Igissinov via Scopus - Elsevier. Preferred source. Ethnic and age variation of cancer of the reproductive system in women of Kyrgyzstan Asian Pacific Journal of Cancer Prevention. Epidemiology of Esophagus, Lung and Breast Cancer in Mountainous Regions of Kyrgyz Republic. 2002 | journal-article. PMID: 12718612. Key Words: Ovarian cancer “ reproductive age “ incidence rate “ ethnic populations “ Kyrgyzstan. Asian Pacific J Cancer Prev, 9, 331-334. Introduction. Epidemiological studies of ovarian cancer have shown that the dissemination worldwide is not even (Parkin et al., 2003; Zaridze, 2001). Here, the influence of ethnicity and age upon incidence of ovarian cancer among women of reproductive age in Kyrgyzstan is documented. Materials and Methods. Documents of the National Oncology Center under the Ministry of Health of Kyrgyz Republic for patients who were, for the first time in their lives, diagnosed with ovarian cancer were used as data resources for the research.