Epidemiology of Esophagus Cancer in Kazakhstan

S.I. Igisinov[1], Zh.A. Arzykulov[1], N.S. Igisinov[2], G.Dzh. Seytkazina[2]

[1]Kazakh Research Institute of Oncology and Radiology, Kazakhstan, [2]Astana Medical University, Kazakhstan

Introduction

About 74% of CIS area is characterized by low level of esophagus cancer (EC) incidence (till $10.0^0/_{0000}$), and 26% of area are characterized by high level – from 11.0 to $86.4^0/_{0000}$. It was found out that in common decrease of EC incidence in CIS there are areas where incidence of esophagus cancer is still high as in republics of Asia and Kazakhstan. Kazakhstan takes the second place on the frequency of EC giving up its place to Turkmenistan where EC varies from 9.0 to $57.8^0/_{0000}$.

Materials and Methods

Materials concerning EC of Kazakh Research Institute of Oncology and Radiology for 1989-2006 were studied. Data about population number from Statistics Agency of the Republic of Kazakhstan were used. Extensive and uncertain indexes of EC were calculated according to current methods of sanitary statistics.

Results

High portion of EC of whole population was revealed among persons aged 70 and older (33.0%), and among men aged 60-69 (37.4%) among female group aged 70 and older (40.5%). At male group aged 50-59 (25.9%) portion of EC was 1.8 times higher comparatively to the data of analogical group of female (14.2%).

In whole EC incidence in Kazakhstan in average was equal to $15.2^0/_{0000}$ and tended to decrease from $15.5^0/_{0000}$ (1989) to $9.8^0/_{0000}$ in 2006. Rate of EC decrease appeared to be significant (T=-0.32%), but angle of disease trend *tg α to* 30¤, which is evidenced by real decrease of this cancer form on the area of Kazakhstan. Such fact may be probably explained by the fact that social and economical condition of population became better and ecological situation in country changed in connection with liquidation of Semipalatinsk and Asgirsk nuclear firing grounds. It is also explained by change of nutrition character with usage of products with smaller content of cancerogenic agents such as nitrosamine (nitrites, nitrates, ammoniac) and others. Besides, age population structure changed, cohort which was exposed to influence of nuclear explosion performed in Kazakhstan became less. These factors influenced on range spreading of EC in various regions of Kazakhstan.

In Eastern regions of Kazakhstan - in Semipalatinsk region – incidence of EC was high ($21.0^0/_{0000}$) comparatively to republican data ($15.2^0/_{0000}$) in dynamics it was decreased from $20.5^0/_{0000}$ (1989) to $16.4^0/_{0000}$ in 1996. In dynamics indicator of EC incidence in Eastern Kazakhstan region decreased from $10.1^0/_{0000}$ (1996) to $9.2^0/_{0000}$ in 2006. In Pavlodar region ($10.3^0/_{0000}$) it was also noted tendency to decrease of EC from $12.4^0/_{0000}$ (1989) to $6.0^0/_{0000}$ in 2006.

Sharp decrease of EC in Eastern regions of Kazakhstan after Union breakdown was due to migrational process which took place in 1991-1995.

In Northern regions of Kazakhstan in Kostanay region ($8.8^0/_{0000}$), in Nothern Kazkhstan region ($10.4^0/_{0000}$) incidence of EC was lower than in Republic. In dynamics EC in Kostanay region decreased from $10.6^0/_{0000}$ (1989) to $7.7^0/_{0000}$ in 2006. The decrease was also in Northern Kazakhstan region from $10.8^0/_{0000}$ to $7.9^0/_{0000}$ correspondingly. EC in this region is relatively stable with small rate of decrease of incidence trend.

In Central region of Kazakhstan – the level of EC incidence was high only in Zheskazgan region – $20.3^0/_{0000}$, in Karaganda region – $5.6^0/_{0000}$, in Akmola region $9.1^0/_{0000}$ in Torgay region $5.9^0/_{0000}$ – these indexes were lower than in republic. In dynamics EC had tendency to growth only in Karaganda region from $5.4^0/_{0000}$ (1989) to $7.7^0/_{0000}$ in 2006

and rate of increase was equal to T=+0.1%.

In Southern region of Kazakhstan indicators of EC rate were characterized that they were higher than in Republic. The highest incidence of EC was established in Kyzylorda region ($46.0^0/_{0000}$) 3 times higher than indicators in Republic, and in dynamics it was decreased from $41.8^0/_{0000}$ to $24.1^0/_{0000}$ (T=-1.1%) for the period 1989-2006. In Zhambyl it was – $12.1^0/_{0000}$, in Taldykorgan – $18.8^0/_{0000}$, in Almaty – $17.1^0/_{0000}$ and in Southern Kazakhstan - $17.0^0/_{0000}$ regions incidence of EC appeared to be relatively equal, but trends of EC had tendency to decrease.

In Western region of Kazakhstan it was established the lowest indicator of EC incidence in Western Kazakhstan region – $10.4^0/_{0000}$ (T=−0.15%), in others regions – in Aktobe region – $19.7^0/_{0000}$ (T=−0.40%), in Magistau region – $23.9^0/_{0000}$ (T=−0.49%) and in Atyrau region – $35.6^0/_{0000}$ these indicators were higher than in Republic, but trends decreased. The highest indicator was revealed in Atyrau region where frequency of EC was 2.3 times higher than in Kazakhstan.

In big cities of Kazakhstan such as Almaty indicator was equal to $7.2^0/_{0000}$ and in Astana $7.0^0/_{0000}$ 2 times lower than in Republic. Decrease of trend of EC incidence was more significant in Astana (T=−0.69%), than in Almaty (T=−0.04%).

Conclusions

On the basis of average annual indicator of EC for 1989-2006 in separate regions of Kazakhstan the range distribution of regions was composed according to EC incidence. It was revealed that data of 8 regions and 2 cities were lower than average republican indicator from 5.6 to $12.1^0/_{0000}$ indicators of 9 regions were higher where frequency of EC varied from 17.0 to $46.0^0/_{0000}$. The first place in Kazakhstan takes Kyzylorda region ($46.0^0/_{0000}$), second – Atyrau region ($35.6^0/_{0000}$), third – Magystau region ($23.9^0/_{0000}$). Revealed regional peculiarities of distribution EC on the area of Kazakhstan allow to efine prior branches in the problem and allow to organize anticancer measures in separate regions.