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Epidemiology of Laryngeal Cancer in Osijek-Baranja County (Eastern Croatia)

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A B S T R A C T

The aim of this retrospective study was to provide the incidence and mortality rate for all patients with laryngeal carcinoma diagnosed in Osijek-Baranja County, during the period of 1999 – 2008. In this period, there were 329 registered patients, from which 301 (91.5%) males, and 28 (8.5%) females. Age-standardized rate (ASR World) laryngeal cancer incidence was 6.4/100,000 (13.4/100,000 for males and 0.9/100,000 for females). In the same period, 238 people, including 224 (94.1%) men and 14 (5.9%) women died of laryngeal carcinoma. Age-standardized rate (ASR World) laryngeal cancer mortality was 4.4/100,000 (9.8/100,000 for males and 0.5/100 000 for females). There is a significant decline in mortality in males and increased mortality in females. Laryngeal carcinoma is a significant public health problem in the Osijek-Baranja county. Although the study period shows a tendency to decrease in the number of new cases and deaths, in the times ahead it is important to focus the emphasis on prevention and early detection with the goal of reducing incidence and mortality.

***Key words**: laryngeal cancer, incidence, mortality, Osijek-Baranja County*

Introduction

Malignant diseases have a high mortality rate. In the overall, malignant diseases are in second place by mortality rate, after cardiovascular diseases, and makes 20–25% of all deaths[1]. Laryngeal cancer makes only 1–3% of all cancers diagnosed annually in the world, but is one of the most commonly diagnosed malignant tumors of the head and neck (20–28%)[2]. It is more common in men of middle or old age, and relatively rare in women, with male: female ratio 7:1[3,4]. Squamous cell carcinoma is the most common malignant tumor of the larynx (95%). The exact cause is not yet known, but a number of factors is associated with the development of this disease. The most important risk factor is smoking tobacco products, and frequent and excessive alcohol consumption[5,6]. Poor nutrition, poor oral hygiene, vitamin deficiency, liver cirrhosis and immunodeficiency, which is often seen in chronic alcoholics, can also affect the occurrence of laryngeal cancer[7,8]. Etiological factors are HPV infection, gastroesophageal reflux, exposure to radiation and various chemicals and genetic predisposition[9].

Materials and Methods

The Institute for Public Health in the Osijek-Baranja County is an institution which, in recent years, has been developing modern technologies and tools for monitoring malignant diseases. The registration of malignant diseases is conducted through samples of leading international registres, whereby it is insisted that a through pathohistological and cytological verification of the illness is performed. Special attention is given to the mortality rate from malignant diseases, so that specific technologies and tools can offer a high quality data base. Processed informations are forwarded to the Croatian Cancer Registry. To review death from laryngeal cancer,

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we used data from Croatian Bureau of Statistics from 1999–2008, and to show the frequency of laryngeal cancer in the Osijek-Baranja county, we used data from Croatian Cancer Registry. Age-specific rates were calculated for the period 1999–2008, where we used Croatian Population Census for 1991 and 2001[10]. Age-standardised incidence rates of laryngeal cancer were calculated by the direct standardization method, using the World Standard Population[11]. Statistical analyses were performed using the Statistical Package for Social Sciences (SPSS 13.0).

Results

In Osijek-Baranja County, in the period from 1999–2008, there were 329 registered cases of laryngeal cancer, of whom 301 (91.5%) men and 28 (8.5%) women. There is a significant difference in the incidence of disease between males and females, with male: female ratio 10.8:1 (Table 1).

TABLE 1
DISTRIBUTION OF LARYNGEAL CANCER PATIENTS REGISTERED IN THE OSIJEK-BARANJA COUNTY (1999–2008)

	N	%
Female	28	8.5
Male	301	91.5

In this period, early stage of laryngeal carcinoma was found in 55% of cases, advanced disease with a regional lymph node methastases was found in 23% of cases, in 19% it was a disease with distant metastases, while an unknown stage of disease was 3% (Table 2).

TABLE 2
DISTRIBUTION OF PATIENTS WITH LARYNGEAL CANCER IN RELATION TO STAGE OF THE DISEASE REGISTERED IN THE OSIJEK-BARANJA COUNTY (1999–2008)

Stage of disease	N	%
Localized (confined to primary site)	181	55
Regional (spread to regional lymphnodes)	76	23
Distant (cancer with distant methastases	62	19
unknown (unstaged)	10	3
total	329	100

Through a ten-year study period, age-standardized rate (ASR World) laryngeal cancer incidence was 6.4/100,000 (13.4/100,000 for males and 0.9/100,000 for females). The incidence rate showed a significant decline in men, whereas in women there is a constant trend (Figure 1).

Most cases of laryngeal cancer (55%) occur in people over 60 years. The incidence increases with age, with a peak age of eight (75–79) decade of life for men. Similar distribution is in women, but the curve is more linear after the sixties (Figure 2).

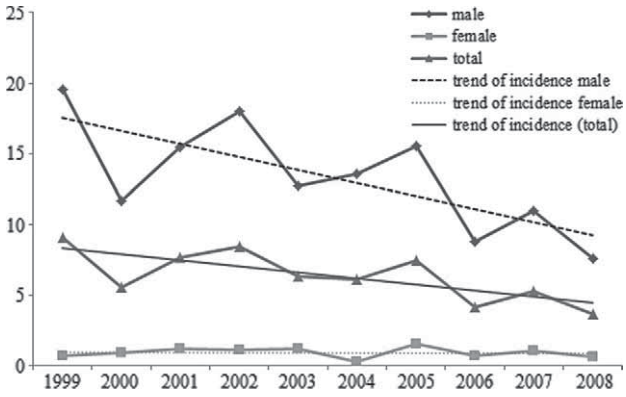

Fig. 1. Age-standardized (ASR World) incidence rates of laryngeal cancer in Osijek-Baranja County by sex, 1999–2008.

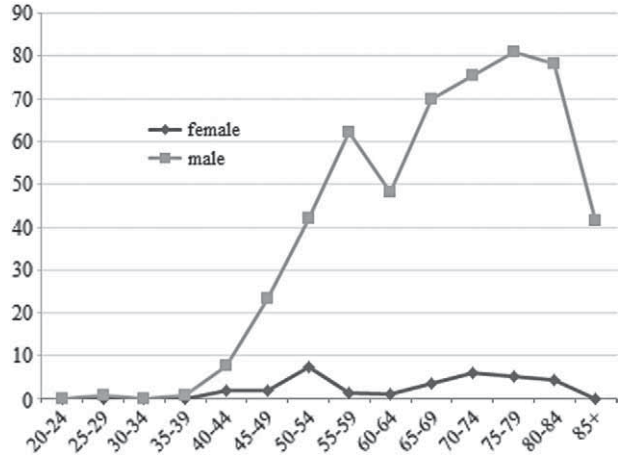

Fig 2. Average age-specific incidence rates of laryngeal cancer in Osijek-Baranja County by sex, 1999–2008.

From 1999–2008, in the Osijek-Baranja County 238 people died of laryngeal carcinoma, including 224 men (94.1%) and 14 women (5.9%) (Table 3).

TABLE 3
DISTRIBUTION DEATH OF LARYNGEAL CANCER IN THE OSIJEK-BARANJA COUNTY (1999–2008)

	N	%
Female	14	5.9
Male	224	94.1

Age-standardized rate (ASR World) laryngeal cancer mortality, which includes the number of deaths with laryngeal cancer as the underlying cause, was 4.4/100,000 (9.8/100,000 for males and 0.5/100,000 for females). The-

re is a significant decline in mortality from laryngeal cancer in men and increased mortality in women (Figure 3).

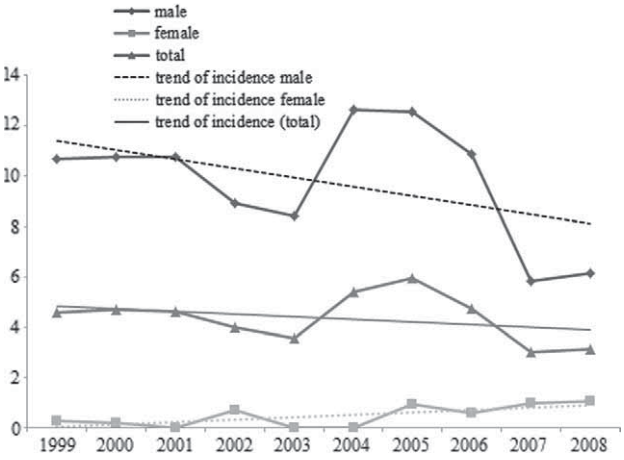

Fig 3. Age-standardized (ASR World) mortality rates of laryngeal cancer in Osijek-Baranja County by sex, 1999–2008.

Mortality from laryngeal cancer in men increases with age with the highest rate in the seventh and eighth decade of life. Similar distribution is in women, but the curve is linear over the sixties and monitors the incidence (Figure 4). Laryngeal cancer cause many lost years of potential life expectancy, which is theoreticaly 70

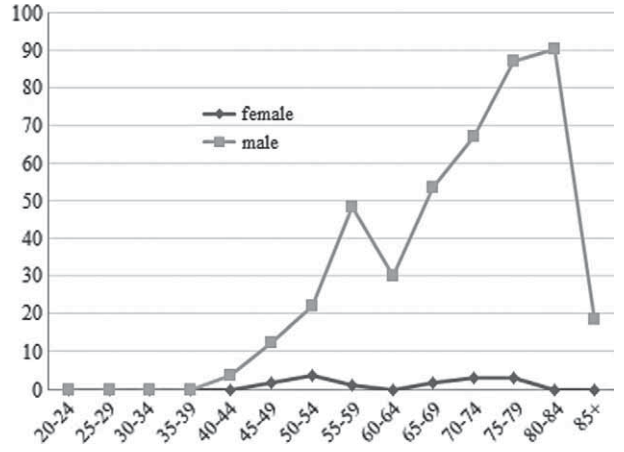

Fig 4. Average age-specific mortality rates of laryngeal cancer in Osijek-Baranja County by sex, 1999–2008.

years. This information can be provided by means of the »years of potential life lost« (YPLL). In study period average rate of YPLL in laryngeal carcinoma patients was 60.4/100,000 (for males 98.0/100,000, and for females 24.2/100,000).

Discussion

The incidence of laryngeal cancer in the Osijek-Baranja County is at the very top of Europe, and is greater than the incidence in the Republic of Croatia[12,13]. This situation could be associated with a large number of smokers in the adult population (more than 30%)[14]. The upward trend in laryngeal cancer mortality in women probably reflects life changes among women, but also stage at presentation may be relevant.

Despite the progress in endoscopic, radiological and molecular diagnostic methods in the latest decades, in our region laryngeal cancer is diagnosed at an early stage in only 55% of cases.

In Croatia, as in the Osijek-Baranja County, five-year relative survival rate is 55% for males and 65% for females[15]. In the recent years, surgical and oncological treatment of patients with advanced laryngeal cancer have gone through a significant development, and these complex procedures have a significant impact on improving survival rates[16]. Relative survival rates of patients with laryngeal cancer are roughly equivalent to the data that were recorded in countries with highly developed health systems[17].

The incidence of laryngeal cancer in the world differs from country to country. The areas where the incidence is higher (more than 10 per 100,000) as Spain, Italy, France, Brazil and India, while areas with low incidence (less than 3 per 100,000) are Japan, Norway, Sweden and Finland[18]. Reducing the incidence and improving survival of patients with laryngeal cancer in Finland is exception among western countries, because the incidence of laryngeal cancer for men decrease from 6.7 to 2.6, which is attributed to the significant decline in the number of smokers, from 58% to 29% in the period 1960–2001[19–21].

It is necessary to adopt and implement measures that have already proved effective in developed countries, including legislation and its consistent implementation, and education of the population, especially youth, to prevent the start of smoking. Interventions should be combined with the individualized approach which would take the uniqueness of hereditary predisposition and environmental influences into account[22,23].

Conclusions

Laryngeal carcinoma is a significant public health problem in the Osijek-Baranja county. Although the period from1999 to 2008 shows that number of new cases and deaths have tendency to decrease, it is possible to significantly reduce the incidence and mortality, and prolong life with adequate prevention and early detection.

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EPIDEMIOLOGIJA RAKA GRKLJANA U OSJEČKO-BARANJSKOJ ŽUPANIJI (ISTOČNA HRVATSKA)

SAŽETAK

Cilj ove retrospektivne studije bio je prikazati epidemiološke karakteristike raka grkljana dijagnosticiranih u Osječko-baranjskoj županiji u periodu od 1999. do 2008. godine. U promatranom razdoblju u Osječko-baranjskoj županiji registrirano je 329 oboljelih, od toga 301 muškarac (91,5%) i 28 žena (8,5%). Dobno standardizirana stopa (ASR World) incidencije raka grkljana iznosila je 6,4/100,000 (13,4/100,000 za muškarce i 0,9/100,000 za žene). Od 1999. do 2008. godine u Osječko-baranjskoj županiji od raka grkljana umrlo je 238 osoba, od toga 224 muškaraca (94,1%) i 14 žena (5,9%). U promatranom desetogodišnjem razdoblju dobno standardizirana stopa (ASR World) smrtnosti od raka grkljana iznosila je 4,4/100,000 (9,8/100,000 za muškarce i 0,5/100,000 za žene). Prisutan je značajan pad smrtnosti u muškaraca i porast smrtnosti kod žena. Rak grkljana značajni je javnozdravstveni problem u Osječko-baranjskoj županiji. Iako u razdoblju od 1999. do 2008. godine pokazuje tendenciju opadanja u broju novooboljelih i umrlih, u vremenima koja dolaze važno je naglasak usmjeriti na prevenciju i rano otkrivanje s ciljem smanjenja incidencije i smrtnosti.