

The Incidence of Skin Squamous Cell Carcinoma in Osijek-Baranja County – An Epidemiological Study

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ABSTRACT

The aim of this study is to show the incidence of squamous cell carcinoma of the skin in Osijek Baranja County, Eastern Croatia, in period from 2004 to 2009. This is the first report of epidemiological features of squamous cell skin carcinoma in this region. In this period we registred 469 patients with SCC of the skin, from which 237 females (50.5%) and 232 males (49.5%). World age-standardised rates (ASRW per 100,000) incidence in this period was 11.8/100,000 (16.8/100,000 for men and 9.0/100,000 for women). SCC of the skin occur in elderly commonly after 70 years. Most common localization is on the photoexposed areas, for example head, neck and backs of the hands. These localization varied in males and females (in females 2.5 times more in the nose area than males while 6 times more on the ear). The relation between photoexposed and photo non-exposed areas is 5:1. These results will serve as reference for studying the patterns of descriptive epidemiology of squamous cell carcinoma of the skin in the Osijek-Baranja County and the surrounding region.

Key words: skin, squamous cell carcinoma, incidence, Osijek-Baranja County

Introduction

Malignant tumors of the skin are the most common malignanat tumor in the human body, and the incidence rate of melanoma and non-melanoma skin cancer entities is obviously increasing worldwide. Malignant melanoma (MM), basal cell carcinoma (BCC), and squamous cell carcinoma (SCC) are the most common type of skin cancer, and representing about 95–98% of all malignanat tumors of the skin. Epidemiological characteristics are well known for MM by routine follow up through national register for cancers, and for some other neoplasms of the skin due to their high malignancy (for example Merkel cell carcinoma). BCC and SCC are the most common skin malignancies, but it is imposible to registred them routinely due to resorce constraints^{1,2}. The same problem is in Croatia, and only MM is registered from 1962 routinely. Incidency of the non-melanomic skin cancers till 2003 is unknown³. A study from 2003 to 2005

shows their epidemiology. Age-standardised incidence rate (ASRW per 100,000) in this period in Croatia was 8.9/100,000 for SCC in male and 5.2/100,000 in female patients⁴. Cutaneous squamous cell carcinoma is a common cancer arising from malignant proliferation of the keratinocytes of the epidermis. This tumor is local invasive, but appropriate therapy is usually curative. Rarely, cutaneous SCC metastasize and cause death. The incidence of cutaneous SCC have increased over the past 20 years in many countries. Ultraviolet radiation derived from sun exposure plays a major role in the development of these tumours which appear predominantly on areas of the most frequently exposed⁵. Exposure to ionizing radiation, arsenic and metoxsalen, chemical carcinogenes, smoking and skin color are also play role in etiology of cutaneous SCC^{6,7}. The mortality rate of cutaneous SCC is higher than basal cell carcinoma, some of them have a

highest malignant potential, specially those which arising in scars (specially burn scars), or in those which arise from chronic inflammation of the skin, actinic keratosis, previously irradiated skin or those which arise from Bowen disease⁸. The epidemiology of MM in Osijek-Baranja County is well known, but the epidemiology of cutaneous squamous cell carcinoma in this area is not sufficiently known, and because of resource constraints, there is no registration protocol for these cancers⁹.

Materials and Methods

In this study we show the incidence of squamous cell carcinoma of the skin in Osijek-Baranja County. We studied 469 cases of cutaneous SCC diagnosed in Osijek-Baranja County in the period from 2004–2009. Data was also derived from hospital discharge notification called »Onco Type Cards« and outpatient »Malignant Neoplasm Notification«, submitted to the Institute of Public Health for the Osijek-Baranja County and National Cancer Registry. All cases were verified by histopathology. Data were encoded according to the International Classification of Diseases Tenth Revision (ICD-10), i.e. code C44¹⁰. Age-standardised incidence rates of SCC was calculated by the direct standardization method, using the World Standard Population¹¹. Statistical analysis is done by use SPSS 13.0 software.

Results

In Osijek-Baranja County in a six-year period from 2004 to 2009 there were registered 469 patients with SCC of the skin, from which 237 females (50.5%) and 232 males (49.5%) (Table 1). 97.4% of all cases are over 50 years old, more likely between 70–79 years old (Figure 1).

TABLE 1
DISTRIBUTION OF SQUAMOUS CELL SKIN CANCER (SCC)
PATIENTS REGISTERED IN THE OSIJEK-BARANJA COUNTY
(2004–2009)

	N	%
Female	237	50.5
Male	232	49.5

Age-specific incidence rate in males and females increased after 60 years, with a peak after age 80, which is obviously more in males (Figure 2).

According to the anatomical localization, most common affected area are head and neck (81.4% females and 77.6% males) in comparison with the trunk area and extremities (13.9% females and 18.1% males). These localization varied in males and females (in females 2.5 times more in the nose area than males, while 6 times more on the ear in males than females). In 2.5% females and 2.6% males anatomical localization is unknown. The relation between photoexposed and photo non-exposed areas are 5:1 (Table 2).

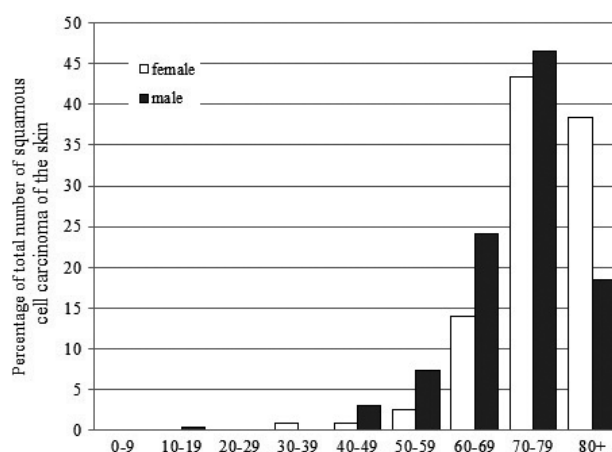


Fig. 1. Distribution of skin squamous cell carcinoma by age and sex in Osijek-Baranja County, 2004–2009.

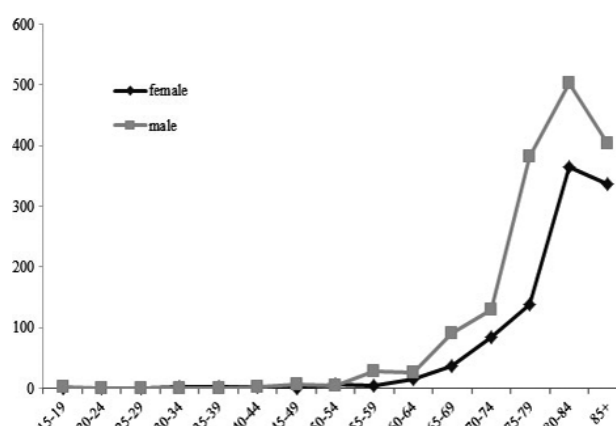


Fig. 2. Average age-specific incidence rates of skin squamous cell carcinoma in Osijek-Baranja County, 2004–2009.

Age-standardised rate (ASRW per 100,000) incidence SCC of the skin in this period is 11.8/100,000 (16.8/100,000 for men and 9.0/100,000 for women). Through the last 6 years the incidence rate continuously increased. (Figure 3).

Discussion

The Osijek-Baranja County is situated in north-eastern Croatia and takes up a total area of 4,155 km², which is 7.3% of Croatia's territory. It is a predominately low lying area where agriculture has been dominate for centuries. It has a continental climate with characteristic hot summers, and the last 9 years has had an average summer temperature about 1.5–2.5 °C higher than average (1961–1990). The Osijek-Baranja County is located on 45° 32' N and 18° 44' E latitude and longitude respectively. In this area yearly about 1.800–1.900 sunny hours^{12,13}. According to the 2001 census, the Osijek-Baranja County has a population of 330,506 (207,392 in cities and 123,114 in municipalities), 48% are males and 52% are females¹⁴.

TABLE 2
PERCENTAGE OF CASES WITH SQUAMOUS CELL SKIN
CARCINOMA BY ANATOMICAL SITE AMONG FEMALES AND
MALES IN THE OSIJEK-BARANJA COUNTY FROM 2004–2009

Total number	FEMALE %		MALE %	Total number
193	81.4	Face, head, neck	77.6	180
41	17.3	Scalp or Forehead	17.2	40
15	6.3	Eyelids	4.7	11
8	3.4	Ears	19.8	46
51	21.5	Nose	9.5	22
6	2.5	Lips	5.6	13
68	28.7	Cheek, Chin or Jaw	17.7	41
4	1.7	Neck	3.0	7
9	3.8	Trunk	9.1	21
7	3.0	Front	4.3	10
2	0.8	Back	4.7	11
15	6.3	Upper extremities	7.3	17
8	3.4	Arms	0.4	1
7	3.0	Hands	6.9	16
9	3.8	Lower extremities	1.7	4
9	3.8	Legs	1.3	3
–	–	Foot	0.4	1
2	0.8	Genitals	0.4	1
3	1.3	Other site	1.3	3
6	2.5	Unknow primary localization	2.6	6

Incidence of malignant skin tumors, taken mainly etiological factor of insolation at different latitudes, varies considerably. The frequency depends on the annual number of sunny days. Going from the equator to the poles for every 10 degrees of latitude the frequency is reduced by about 50%¹⁵. Although the moderate climate zone, Osijek-Baranja County has a significant incidence of SCC of the skin. In the observed period, incidence rates are

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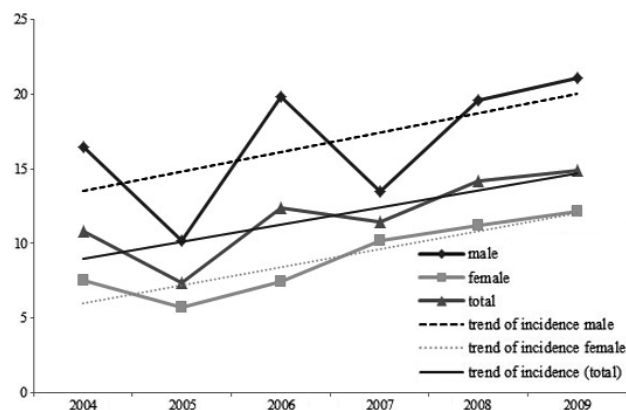


Fig 3. Skin squamous cell carcinoma age-standardized (ASR World) per 100,000 incidence rates in Osijek-Baranja County by sex, 2004–2009.

significantly higher than the values for Croatia. These results may be explained by the fact that Osijek-Baranja County has the highest proportion of agricultural population in relation to other counties. According to the latest agricultural registry from 2003, Osijek-Baranja County had 41,103 agricultural households¹⁶.

In our study, the most common area affected are head and neck in both sexes, also occur in photo non-exposed area (back), and as we know that MM are commonly on the back in males, it suggests that exposed to high dose of UV radiation within several months due to agricultural work and holiday and the people in this area mainly have typ I and typ II skin. Ear is most affected area in males than females due to short hair, and less in the area of nose due to wearing a hat.

Conclusion

The incidence of cutaneous SCC in Osijek-Baranja County is significant and leads to be a public health burden due to morbidity and mortality rates. Early detection and education of the population is essential to eliminate the risk factors and decrease the incidence and mortality.

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INCIDENCIJA PLANOCELULARNOG KARCINOMA KOŽE U OSJEČKO-BARANJSKOJ ŽUPANIJI, 2004–2009

S A Ž E T A K

Cilj ove studije je prikazati incidenciju planocelularnog karcinoma kože u Osječko-baranjskoj županiji, Istočna Hrvatska, u razdoblju od 2004 do 2009. Ovo je prvo izvješće o epidemiološkim značajkama planocelularnog karcinoma kože u ovoj regiji. U tom razdoblju registrirali smo 469 bolesnika s planocelularnim karcinomom kože, od kojih 237 žena (50,5%) i 232 muškaraca (49,5%). Dobno-standardizirana stopa (ASRW 100,000) incidencije u tom razdoblju bila je 11,8/100,000, 16,8/100,000 za muškarce i za žene 9,0/100,000. Planocelularni karcinom kože javlja se u starijih osoba najčešće nakon 70 godina. Najčešće lokalizacije su na fotoekspoziranim područjima, na primjer glava, vrat i dorsum šaka. Ove lokalizacije variraju u muškaraca i žena (kod žena 2,5 puta više u području nosa, kod muškaraca 6 puta više na uhu). Odnos između fotoekspoziranih i foto ne ekspoziranih područja je 5:1. Ovi rezultati će poslužiti kao referenca za proučavanje obrazaca deskriptivne epidemiologije planocelularnog karcinoma kože u Osječko-baranjskoj županiji i široj regiji.