

Increasing Burden of Melanoma in Croatia

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ABSTRACT

Melanoma consists 4–5% of all skin cancers, but it contributes to 71–80% of skin cancers deaths. It is controversial whether worldwide increases in melanoma incidence represent a true epidemic but at the same time that dramatic increase in incidence occur in setting of relatively stable mortality trends, observed in Croatia also. The majority of authors accept that main risk factors for melanoma relate to environmental exposure and genetics with epidemiologic studies linking sun exposure to melanoma development. Data were obtained from Croatian cancer register for patients diagnosed between 1999 and 2008, for malignant melanoma of the skin (ICD-10 code C43) at national level and from 2003 to 2008, at the County level (Primorsko-goranska County). Melanoma incidence nearly doubled in males from 8.75 to 13.4/10⁵ per year, fold in females from 9.1 at the start of observation to the end of 12.0/10⁵ per year in Croatia. Melanoma incidence rates were much more higher for Primorsko-goranska County with range from 10.1 to 17.5/10⁵ per year. The greatest increase of melanoma incidence rates was in males 60 years and over year group at diagnosis. National comparison of variation in cancer incidence by region and age can provide basis for public health prevention. It requires the integration of information on risk factors, incidence that could help to reduce regional inequalities in incidence and reduce the future cancer incidence.

Key words: melanoma, Croatia

Introduction

Melanoma consists 4–5% of all skin cancers, but it contributes to 71–80% of skin cancers death. Melanoma is a neoplasm of melanocytic origin having the most rapid increase in incidence in many countries comparable to other tumors¹. Melanoma, the fastest growing form of cancer in male and third fastest growing form of cancer in female population is occurring as a consequence of increasing UV-B irradiance². Melanoma incidence rates increase with proximity to the Equator, however, in Europe, the highest incidence rates are observed in the Northern Europe³. The incidence of melanoma increase with age, but in past decades melanoma is more often diagnosed in people aged 25–40⁴. Croatia is considered to be a very old country regarding its population. Demographic projections reveal a further increase in the share of people over 65 years in future. Today's lifestyle has resulted in increased sun exposure throughout the whole lifetime. The most deleterious effects of UV radia-

tion is the development of various types of skin malignancies such as basal cell carcinoma, squamous cell carcinoma and melanoma⁵.

In the past fifteen years the incidence of melanoma in Croatia has constantly been rising and since 2000 it has been considered one of the fifteen most common malignant diseases, becoming important public health issue.

The primary aim of this study was to update our understanding of melanoma trends in recent years in Croatia, with specific attention on Primorsko-goranska county.

Materials and Methods

Cases of melanoma recorded from January 1, 1999 to December 31, 2008 for Croatia and from 2003 to 2008 for Primorsko/goranska county were retrospectively ana-

lyzed. Data were derived from database held by national Cancer Registry⁶, create from hospital discharge notification called »Onco type card« and outpatient »Malignant neoplasm notification«. All melanoma were verified by histopathology. Data were encoded according to the International Classification of Diseases Tenth Revision (ICD-10), code C43 for Melanoma., and Ninth (ICD-9), with code 172/II for melanoma. Crude rate were calculated on the basis of 1991 and 2001 Croatian census⁷.

Statistical analysis was done by use Statistica 6.0 software.

Results

During the period 1999–2008 there were 4.723 new melanoma patient recorded in Croatia, 2.341 men and 2.382 women respectively. An overall increasing of crude incidence rate of 35% for the named period was found, but without any significant difference between gender and year of observation.

During the period 2003–2008 there were, in Primorsko-goranska county total off 252 new melanoma patient recorded (127 men and 125 women), with much higher increase of incidence crude rate of 72% thruve observed period. Only for the year 2007 increase was found in men

higher than in women (OR=1.79; 95%CI=1.01–3.19). Comparing all the new cases of melanoma for the time of 2003–2008 between national and county level, there were significant increase in Primorsko-goranska county (OR=1.23; 95%CI=1.09–1.41) and specially for the subsequent years: the 2004 (OR=1.63; 95%CI=1.21–2.20), 2007 (OR=1.41; 95%CI=1.05–1.89), and 2008 (OR=1.35; 95%CI=1.02–1.79). Details are presented in Tables 1 and 2.

According to gender, significant increase in men living in Primorsko-goranska county was found during the whole observed period towards Croatia (OR=1.26; 95%CI=1.05–1.51) and for the year 2007 (OR=1.73; 95%CI=1.19–2.52), as well 2008 (OR=1.35; 95%CI=1.02–1.79). Also, for women from Primorsko-goranska county was observed significant increase of new cases of melanoma respectively to Croatia: during the period 2003–2008 (OR=1.21; 95%CI=1.01–1.46), and year 2004 (OR=1.96; 95%CI=1.37–2.82).

Specific incidence by age and gender in period of 1999–2008 in Croatia is shown in Figure 1.

During the 2003–2008 period the incidence of melanoma in the age group under 40 years slightly differed, while in older age group (40–59, and 60 and over) there was a significant increasing. An overall increasing of 37.3%

TABLE 1
INCREASE OF MELANOMA ALL AGES INCIDENCE IN CROATIA

Year	Males n = 2 341		Females n = 2 382		OR	95%CI
	Cases	Incidence	Cases	Incidence		
1999	217	9.4	215	8.7	1.07	0.89–1.30
2000	238	10.3	224	9.1	1.13	0.94–1.36
2001	237	11.1	236	10.3	1.08	0.90–1.30
2002	187	8.8	209	9.1	0.96	0.79–1.17
2003	192	9.0	222	9.6	0.93	0.77–1.13
2004	190	8.9	237	10.3	0.86	0.71–1.04
2005	303	14.2	283	12.3	1.15	0.98–1.36
2006	240	11.2	236	10.3	1.10	0.92–1.31
2007	251	11.7	245	10.7	1.10	0.93–1.32
2008	286	13.4	275	12.0	1.12	0.95–1.32

TABLE 2
INCREASE OF MELANOMA ALL AGES INCIDENCE IN PRIMORSKO-GORANSKA COUNTY

Year	Males n = 127		Females n = 125		OR	95%CI
	Cases	Incidence	Cases	Incidence		
2003	14	9.5	17	10.7	0.89	0.44–1.80
2004	16	10.9	32	20.2	0.54	0.30–0.97
2005	21	14.3	17	10.7	1.33	0.70–2.51
2006	17	11.5	18	11.4	1.02	0.52–1.97
2007	30	20.4	18	11.4	1.79	1.01–3.19
2008	29	19.7	23	14.5	1.36	0.79–2.34

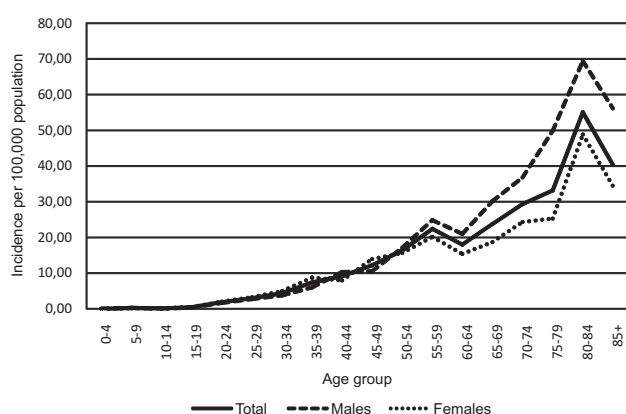


Fig. 1. Specific incidence of melanoma in Croatia by age and gender during 2003–2008. period

was found in men 40–59 age group and 57.9% in men aged 60 years and older. Details are shown in Table 3.

In the above mentioned period the incidence of the melanoma was significantly higher in women in age group under 40 by comparison with men (OR=0.73; 95%CI=0.58–0.91). Older age groups show greater incidences, specially men 60 years and older, that had significant higher incidence rate than women during the whole

observed period (OR=1.46; 95%CI=1.32–1.60) and during the majority of the years: 2005 (OR=1.59; 95%CI=1.26–1.99), 2006 (OR=1.57; 95%CI=1.24–1.99), 2007 (OR=1.71; 95%CI=1.34–2.17) and 2008 (OR=1.65; 95%CI=1.32–2.05).

Discussion

Our analysis of over 4.700 new cases of melanoma, suggest a continued rise in new cases of melanoma in Croatia and Primorsko-goranska county. These findings update prior reports^{2–5} indicating persistent rises in incidence in past 30 years in Croatia. In concordance with prior reports, incidence increases were most dramatic for men aged 60 and older. Melanoma incidence is lower than in the neighboring Slovenia, but higher than in areas of more Southern latitude in some other Mediterranean countries, such as Spain and Italy³. Moreover, according to latest edition of the Cancer Incidence in Five Continents¹⁰, Croatia had higher incidence of melanoma than most of the Mediterranean countries.

Some have argued⁸ that the rapid rises in melanoma incidence are indicative of a true epidemic on the basis of greater ultraviolet radiation-induced carcinogenesis, while others⁹ insist that the apparent trends are an artifact of improved surveillance, diagnostic scrutiny and regular

TABLE 3
INCIDENCE OF MELANOMA IN CROATIA BY GENDER AND AGES
UNDER 40, 40–59 AND 60 YEARS AND OVER

Age/Year	Males		Females		OR	95%CI
	Cases	Incidence	Cases	Incidence		
<40						
2003	15	1.3	25	2.2	0.58	0.31–1.10
2004	22	1.9	30	2.7	0.71	0.41–1.23
2005	26	2.3	28	2.5	0.90	0.53–1.53
2006	27	2.3	30	2.7	0.87	0.52–1.47
2007	23	2.0	31	2.8	0.72	0.42–1.23
2008	21	1.0	35	3.1	0.58	0.34–0.99
40–59						
2003	70	11.8	52	8.6	1.38	0.96–1.97
2004	69	11.7	80	13.2	0.88	0.64–1.22
2005	124	21.0	113	18.7	1.12	0.87–1.45
2006	74	12.5	76	12.6	0.99	0.72–1.37
2007	90	15.2	95	15.7	0.97	0.75–1.29
2008	96	16.2	89	14.7	1.10	0.83–1.47
60+						
2003	107	27.1	145	25.0	1.09	0.85–1.39
2004	99	25.1	127	21.9	1.15	0.88–1.49
2005	153	38.8	142	24.5	1.59	1.26–1.99
2006	139	35.2	130	22.4	1.57	1.24–1.99
2007	138	35.0	119	20.5	1.71	1.34–2.17
2008	169	42.8	151	26.0	1.65	1.33–2.05

screening leading to increased diagnosis of thinner tumors with lower or no metastatic potential. The absolute magnitude of melanoma incidence in older white men in USA⁸ warrants greater public health attention, as those data suggest a contemporary incidence rate exceeding 125 cases per 100.000 men aged 65 and older. This is proportional to the incidence of non-Hodkin's lymphoma in the same population, making melanoma the 5th most

common cancer in older men following prostate, lung, colorectal and bladder cancer. These findings differ from our situation in Croatia where melanoma, since 2000 has become one of the fifteen most common cancer.

Melanoma is truly increasing in all age categories and across socioeconomic levels, and it will soon become a major concern for an increasingly aging population and their health care providers.

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RASTUĆI TERET MELANOMA U HRVATSKOJ

SAŽETAK

U svim malignim oboljenjima kože, melanom učestvuje s 4–5%, ali odgovoran je za 71–80% smrti uzrokovanih malignim oboljenjima kože. Kontroverzna je situacija da porast incidencije melanoma predstavlja pravu epidemiju, ali u isto vrijeme, ovaj se dramatični porast incidencije širom svijeta dešava u okruženju relativno stabilnog mortaliteta, zabilježenog i u Hrvatskoj. Većina autora prihvaća okolišnu izloženost i genetsko breme kao glavne rizične čimbenike s uporištem u epidemiološkim studijama koje povezuju razvoj melanoma i izloženost suncu. Za ovaj rad korišteni su podaci o novooboljelima od melanoma Registra za rak Hrvatske (MKB-X, šifra C43), za Hrvatsku u razdoblju od 1999–2008. i za Primorsko-goransku županiju, u vremenu od 2003–2008. Incidencija melanoma kod muškaraca se gotovo udvostručila, od 8,7 do 13,4/10⁵, za razliku od stopa kod žena koje su bile niže, od 9,1 na početku promatranja do 12,0/10⁵ u posljednjoj godini. Stope incidencije od melanoma bile su u Primorsko-goranskoj županiji više i kretale au se u rasponu od 10,1 do 17,5/10⁵ godišnje. Najveći porast incidencije melanoma zabilježen je kod muškaraca starijih od 60 godina.