INCIDENCE OF EYELID MALIGNANCIES IN VARNA REGION

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ABSTRACT

Aim: To study the incidence of malignant eyelid tumors and particularly of eyelid basal cell carcinoma in Varna region between 1996 and 2005. **Material and Methods:** Data for the incident eyelid cancer cases were obtained from the Regional Cancer Dispensary and the patient register of the Specialized Eye Hospital in Varna. The data for the numbers of the population of Varna district at risk were received from the local office of the National Statistical Institute. The age standardized rates were derived by the direct method using the "world" standard population. **Results:** The average age-adjusted incidence for all malignant eyelid tumors was 3,47 per 100 000 per year, for BCC 3,02 per 100 000. The age-adjusted malignant eyelid tumor incidence for females was 2,9 per 100 000, in male it was significantly higher - 4,25 per 100 000. The age adjusted incidence for all malignant eyelid tumors among the urban and rural population were respectively 3,49 per 100 000 and 2,91 per 100 000. **Conclusion:** The incidence of all malignant eyelid tumors and BCC has increased for the period 1996-2005. There is a statistically significant difference in rates between sexes, men suffering more often than women. Incidence increases with age, especially after 60 years.

Key words: basal cell carcinoma, eyelid tumors, incidence, Varna

Epidemiological studies of non-communicable diseases have not been a priority in the scientific research in Bulgaria. More specifically, incidence of eyelid malignancies is not extensively studied with one exception for Plovdiv region (2).

We aim to study retrospectively the incidence of malignant eyelid tumors and particularly of eyelid basal cell carcinoma in Varna region for the period 1996 - 2005.

MATERIALS AND METHODS

Data for the incident eyelid cancer cases for the period 1996-2005 were obtained from the Regional Cancer Dispensary in Varna and the patient register of the Specialized Eye Hospital in Varna.

The Regional Cancer Dispensary is part of a national cancer dispensary system. One of its main tasks is keeping a computerized cancer register analogous to cancer registers in western countries with similar potential for epidemiological studies. According the existing health regulations whenever a new case of cancer is diagnosed the responsible physician is obliged to fill in three copies of a standard "quick notification form", send two of them to the regional

cancer dispensary closest to the patient's permanent address registration and keep one for the patient records. Data received from the Regional Cancer Dispensary was cross-checked with the patient register in the Specialized Eye Hospital in Varna for determining all incident cases or search for additional cases.

A computerized population register based on unique 10 digit personal identification numbers incorporating date of birth and sex is maintained and continuously updated by the Varna municipal office for residential registration. This database was used for estimating the numbers of the population of Varna district at risk by sex, place of residence (urban/rural) five year age groups, for every one of the ten year period (1996-2005). This data were prepared and received upon request from the local office of the National Statistical Institute.

Calculations of age and sex specific and age-standardized incidence were made. The age standardized rates were derived by the direct method using the "world" standard population (3). Comparisons between incidence rates were made with z-test. All statistical analysis was made with SPSS ver 11.5.

RESULTS

The regional cancer dispensary provided a list of 152 patients from their database with histological diagnosis-eyelid malignant tumor. From this list 26 of the patients were ex-

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cluded, as they were residentially ineligible and five more because they were recurrent cases. From the patient registers of the Specialized Eye Hospital were retrieved four additional patients who had underwent operation for newly diagnosed eyelid malignant tumor.

Figure 1. Age standardized* eyelid cancer incidence and eyelid BCC incidence among residents of Varna district from 1996 to 2005. (*Standardized to UICC world population.)

Table 1. Number of new cases and average incidence rates of malignant eyelid tumors and BCC of the eyelid. Rates are given per 100 000 (adjusted for age to the world standard population). No. indicates the number

Year	All malignant tumors				Basal cell carcinoma			
	Male		Female		Male		Female	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate
1996	3	1,95	1	0,44	2	1,33	0	0,00
1997	2	1,20	5	3,10	1	0,58	5	3,10
1998	2	1,41	2	0,95	1	0,62	1	0,42
1999	11	6,55	5	2,62	9	5,37	4	2,21
2000	8	4,98	8	5,02	6	3,57	8	5,02
2001	6	3,71	8	4,47	6	3,71	8	4,47
2002	8	4,65	11	4,71	8	4,65	11	4,71
2003	11	6,18	6	3,34	8	4,51	6	3,34
2004	12	7,27	5	2,22	10	6,07	4	1,68
2005	7	4,00	4	2,02	7	4,00	4	2,01

Thus for the ten year studied period 125 patients were retrieved as registered with newly diagnosed eyelid malignant tumor, 55 (44 %) female and 70 (56%) male. From all patients 81/125 (65%) lived in the urban and the rest 35% in the rural area. All patients had one tumor. The median age at diagnosis was 69 years (range 30-87) for females and 70.5 years (range 47-84) for males. Over the 10-year period there were only two patients (1,6%) under 40 years, both of them female.

All cases were histological verified. The most common histological type was eyelid basal cell carcinoma (BCC) found in 109/125 (87,2%) of the patients, followed by squamous cell carcinoma (9,6%). There was one case (0,8%) of each - sebaceous gland carcinoma, Merkel cell carcinoma, malignant histiocytoma and Kaposi sarcoma. The average age adjusted incidence for all malignant eyelid tumors was 3,47 per 100 000 per year (with 95% CI from 2,84 to 4,09), and for BCC 3,02 per 100 000 per year (with 95% CI from 2,44 to 3,60). Figure 1 shows the trends for age standardized incidence rates for all eyelid cancers and eyelid BCC among residents of Varna district from 1996 to 2005.

Figure 2 Average annual age specific eyelid cancer incidence among residents of Varna district from 1996 to 2005.

Figure 3. Age standardized* eyelid cancer incidence and eyelid BCC incidence among urban and rural population of Varna district from 1996 to 2005. (*Standardized to UICC world population.)

The age adjusted malignant eyelid tumor incidence for females was 2.9 per 100 000 per year (95% CI from 2.10 to 3.69), while in male it was significantly higher - 4.25 per 100 000 per year (95% CI from 3.24 to 5.26). The average annual age standardized incidence rate for eyelid BCC among women was 2.7 (95% CI from 1.94 to 3.48) and

among men 3.49 (95% CI from 2.58 to 4.39) per 100 000. Absolute numbers and rates for all eyelid malignant tumors and BCC for the period by sex are presented in table 1. The incidence of malignant eyelid tumors increased with age for both sexes and is presented at figure 2. The age adjusted incidence among the urban population was 3.49 per 100 000 per year (95% CI from 2.76‰ to 4.23‰) for all malignant eyelid tumors and 3.03 per 100 000 per year (95% CI from 2.35 to 3.71) for BCC. The adjusted rates for the rural population were respectively 2.91 per 100 000 (95% CI from 1.68 to 4.13) for all malignancies and 2.62 per 100 000 (95% CI from 1.47 to 3.77) for BCC. There was no statistically significant difference in age standardized rates between urban and rural population. The trends are presented at figure 3.

DISCUSSION

A similar retrospective approach has been applied in other countries with existing cancer registry system (12,13).

The validity of our results depends mainly upon:

- the completeness with which cases have been registered and retrieved;
- the validity of their classification as 'first in lifetime'
- the validity of case classification as "malignant eyelid tumor" and iv the accuracy with which cases have been correctly matched to their source population.

The completeness of the cancer dispensary register is theoretically guaranteed by the existing explicit regulations for compulsory notification of each cancer case. We were not able to find any validational epidemiological study either on local or national level, but the fact that the biggest specialized eye hospital serving the whole eastern Bulgaria is based in Varna allowed for cross-check of the cancer register with the hospital patient register. Only four additional cases or 0.03% of the cases for the ten year period were retrieved from the hospital register. In order to define the "first ever in lifetime" cases, every case from the cancer register list was cross-checked with the patient's records in the hospital register.

Concerning the third point all cases have been histological verified. Finally the fact that the same populations register was used to check residential eligibility of cases and for calculating population at risk, deals adequately with the fourth point.

The annual age standardized rates for all malignant eyelid tumors were low in the beginning of the period 1996-1998, after-wards they raised approximately two times, remained somewhat stable until 2004 when they started to decline. The trends for BCC incidence have followed the general trend for eyelid malignancies.

The most common histological type of malignant eyelid tumors for Varna region is BCC, which corresponds to results from other studies in USA (4,5,15,10) and Australia (6,9) and some Asian countries (7, 8), but differs from those in the other Asian countries (1,14).

In our study men had significantly higher incidence of malignant eyelid tumors than women. The direction of the

gender difference for BCC was the same although not statistically significant. Results from similar research in Plovdiv, Bulgaria for the period 1978-1987 also show higher incidence for males (2). The same gender difference was observed in other studies e.g. in Olmsted, Minnesota (4), in Singapore (7) and in Finland (12).

A possible explanation for this gender difference in Varna region could be the prevailing typical male professions at the seaside, resulting in men's longer exposure to harmful atmospheric factors, in a region with more intensive sunshine. Studies which show higher incidence rates for eyelid malignant tumors in women are the one in Uzbekistan (11). Similar to all other studies we also observe an increase of incidence with age for both sexes. But while there was a steady increase of incidence with age for females, there was a sharp (4 times) raise for males above 60 years, reaching two times higher levels than in women. That could be explained by the fact that women pay more attention to their facial skin and use different sun-protection creams.

Analysis by place of residence show a little bit higher rates among the urban population. In the only other Bulgarian study the difference by place of residence is in the opposite direction with age-adjusted incidence of non-pigment malignant eyelid tumors in the urban area 2.76 per 100000 and 4.45 per 100 000 in the rural area (2). We found only one other study in Uzbekistan (11) analyzing incidence of malignant eyelid tumors by place of residence. Their results indicate higher rates for towns.

Our research on the incidence of eyelid malignancies and specifically of eyelid BCC is among the first of its kind in Bulgaria. It could serve as a basis in two directions - a study of the incidence of eyelid malignancies in the whole country and a study of the incidence of other malignancies for Varna region. We found that the incidence of all malignant eyelid tumors and BCC has increased for the period 1996-2005. There is a statistically significant difference in rates between sexes, men suffering more often than women. Incidence increases with age, especially after 60 years more sharply for men. The most common eyelid cancer is BCC.

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