



## Non-melanoma skin cancers in the Black Sea Region of Turkey

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### ARTICLE INFO

### ABSTRACT

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Skin cancer is common in humans, particularly who are subjected to sun exposure. The aim of this study is to analyse non-melanoma skin cancers in the Black Sea Region of Turkey. The 967 skin cancer lesions in 957 cases were classified according to their histopathological types, localizations, and age and sex distribution. Our findings were consistent with those reported in the literature except for age distribution. Our data indicated that onset of the disease is in younger ages. Regarding malignancy incidence, Black Sea Region has remarkably higher rates than the rest of the country. Our study also has originality and an initiative nature for introducing data of non-melanoma skin malignancy in the Black Sea Region of Turkey.

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### 1. Introduction

Skin cancers comprise a common and potentially lethal genre 2 of neoplasms, more common in people of white ethnicity, which have Fitzpatrick 1-2 skin type. Recent studies indicate an increase in the incidence, seemingly due to the changing environmental conditions, industrialization, global heating, and increased exposure of ultraviolet light and solar radiation owing to ominous thinning of the ozone layer (Dahl et al., 1992; Acarturk and Edington, 2005; Tiftikcioğlu et al., 2005; Akturk et al., 2006; Omari et al., 2006; Dogan, 2007; Leiter and Garbe., 2008; Young, 2009). According to published data the incidence of the skin cancer has increased since 2001 in Turkey, currently it is in the fourth place after lung, prostate and breast carcinomas. Our region also has a high incidence of cancer; it is in eighth place in all cities in Turkey (Cancer statistics. Turkish Ministry of Health, 2004). The mainstay of income in our region is agriculture and farming,

which are outdoor occupations, subjected to increased sun exposure. On top of that, our region had been subjected to the fallout following Chernobyl Nuclear Accident in 1986, which arguably explains the increased cancer incidence when compared with other regions similarly subjected to sun exposure (Turkish Atomic Energy Authority. 2<sup>nd</sup> Ed. (Turkish), 2007).

The aim of this study is to retrospectively evaluate the non-melanoma skin cancer (NMSC) lesions and to analyse them according to the histopathological types, localizations, and age and sex distribution. According to our literature review, although there are several retrospective studies on skin cancer properties, no paper has been published yet based on the data, which were collected from a unique geographical region. This is a paper to present the initiative nature for introducing data of non-melanoma skin malignancy in Black Sea Region of Turkey.

**2. Materials and methods**

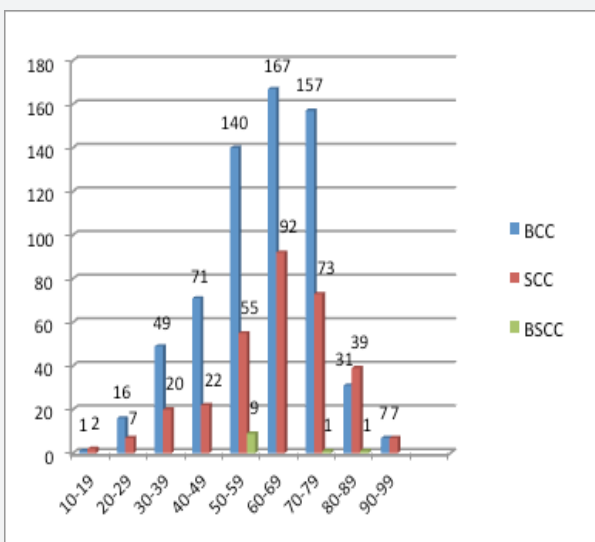
This study was carried out in accordance with the regulations, and with the approval of local ethical committee. Retrospective investigation of the patient files/charts was the main source of data, which were collected in a single institute, as a referral university hospital in Samsun (Samsun Ondokuz Mayıs University), as a biggest city in the middle of the Black Sea Region of Turkey. The design of the study was to evaluate consecutively a thousand files of cases who suffered from NMSC. There was no exclusion criterion. Evaluations were made according to their histopathological types, localizations, and age and sex distribution. The three types of NMSC were encountered; Basal Cell Carcinoma (BCC), Squamous Cell Carcinoma (SCC), and Basosquamous Cell Carcinoma (BSCC). Localizations were classified into four groups, which are head and neck, upper extremity, trunk and lower extremity. Comparisons of differences between groups were done using Chi-square and 2-sample t-tests. P value of <0.001 was considered statistically significant.

**3. Results**

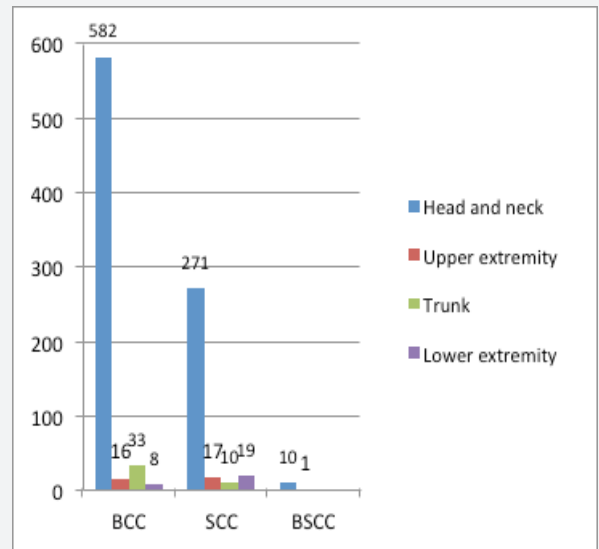
There were 957 patients, 631 were men (66%), 326 were women (33%), and the difference was statistically significant (p<0.001).

639 out of 967 lesions (67%) were BCC, 317 (33% were SCC, and 11 (1%) were BSCC (Fig. 1), BCC was found to be the most frequent type of NMSC, the difference was statistically significant (p<0.001).

BCC lesions were located mainly in men housing 407 out of 639 (64%) of them all, SCC lesions were also more prevalent in men 248 out of 317 (78%). BCC was found to be the prevalent NMSC type in men (57% BCC, 35% SCC) the difference was statistically significant (p<0.001). BCC was also the most frequently seen cancer type in women as well (66% BCC, 20% SCC) the difference was statistically significant (p< 0.001). 462 out of 639 (72%) of BCC lesions and 220 out of 317 (69%) of SCC lesions were seen between ages 50 to 79 (Fig. 1).



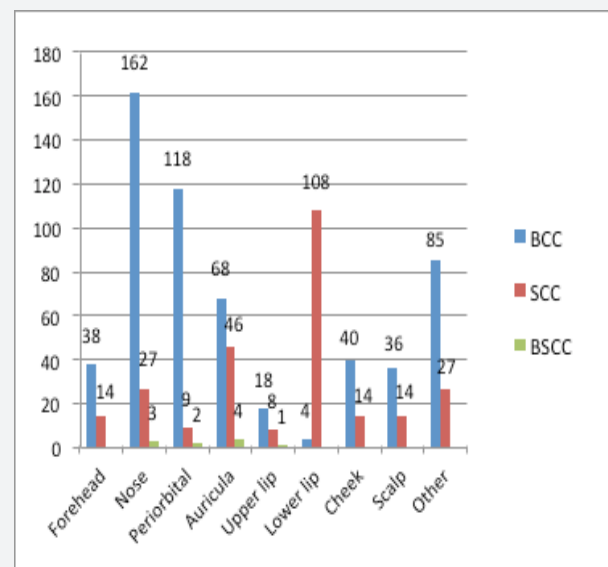
**Fig. 1.** Distribution of cancers among ages  
**BCC:** Basal Cell Carcinoma; **SCC:** Squamous Cell Carcinoma; **BSCC:** Basosquamous Cell Carcinoma



**Fig. 2.** Localizations of skin cancers  
**BCC:** Basal Cell Carcinoma; **SCC:** Squamous Cell Carcinoma; **BSCC:** Basosquamous Cell Carcinoma

When we evaluated the cases according to their professions, we found that 66% of them live in rural areas and mainly occupied with agriculture and farming, whilst remaining 34% were engaged in indoor professions.

According to the localization of the lesions, a significant proportion of lesions were located about the head and neck area (Fig. 2).



**Fig. 3.** Localizations of skin cancers  
**BCC:** Basal Cell Carcinoma; **SCC:** Squamous Cell Carcinoma; **BSCC:** Basosquamous Cell Carcinoma

Being the most common type of lesions, BCC's were chiefly located about the head and neck areas (582 out of 639) the difference was statistically significant (p<0.001). According to our study, 280 out of 582 (48%) BCC lesions were located on nasal and periorbital areas, and 108 out of 271 (41%) SCC lesions were on the lower lip (Fig. 3).

#### 4. Discussion

Regarding malignancy incidence, Black Sea Region has remarkably higher rates than the rest of the country. According to a governmental study focusing on the progress of malignancy incidence rates in 81 cities of Turkey, two big cities of Black Sea Region, Samsun and Trabzon detected to be in top eight with increasing rates. Already having high prevalence rates of malignancy, these two cities were found to have perpetual increase of incidence since 2002 (Cancer statistics. Turkish Ministry of Health, 2004).

Phenotypically fair skin type of population, high rates (66%) of occupational sun exposure and critical geographical location of Black Sea Region regarding ionized radiation are important factors for explaining higher incidence rates (Turkish Atomic Energy Authority. 2<sup>nd</sup> Ed. (Turkish) 2007). Data of this study were collected in a governmental university hospital in the biggest city (Samsun) in the middle part of Black Sea Region. The hospital is the referral center of its region. By covering 967 lesions on 957 patients, this study bears significance for its comprehensive and initiative nature in its region. Wide range studies on this issue include; 1605 cases Aruba (Africa) by Kennedy and Bajdik (2003), 4338 cases in Singapore by Koh et al. (2003), 372 cases in Turkey by Akturk et al. (2006) and 272 cases in Jordan by Omari et al. (2006) in our study, the total of 1072 lesions in 1062 patients provides a range comparable with these mentioned studies.

The histopathological types of total 967 lesions were; 66% (n=639) BCC, 32% (n=317) SCC, and 1% (n=11) BSCC. Kennedy et al. (2001) reported 50% BCC, 31% SCC and 2% MM in 1605 lesions. Koh. et al. (2003) reported 55% (n=2650) BCC, 29% (n=1407) SCC, 5% (n=281) MM in 4765 cases. 77% SCC, 20% BCC and 3% MM has been reported by Fleming et al. (1995). As a remarkable finding, there are higher rates of MM in our series. Converging effect of solar and ionized radiation in this geographical region may be an explanation for the case. SCC and BCC rates are in close range with aforementioned literature. Consistent with the literature, although in some reports SCC is the most common type, BCC is the most frequent skin malignancy in our study as well (Dahl et al., 1992; Fleming et al., 1995; Koh et al., 2003; Akturk et al., 2006; Asuquo and Ebughe, 2012).

Majority of patients emanates from 5th, 6th, 7th decades of life in our study. We had 25 and 77 patients from 3rd and 4th decades respectively. Prevalence of skin malignancy is higher in male population (Coebergh et al., 1991; Dahl et al., 1992; Staples et al., 1998; Svahn et al., 1999; Haris et al., 2001; Ceylan et al., 2003; Akturk et al., 2006; Brewster et al., 2007). In our study percentages of male and female cases according to histopathological types are; 67% M, 33% F for BCC and 78% M, 22% F for SCC. Higher prevalence of

skin malignancy in male population correlates with literature findings (Staples et al., 1998; Svahn et al., 1999; Ceylan et al., 2003; Koh et al., 2003; Akturk et al., 2006; Staples et al., 2006; Omari et al., 2006; Brewster et al., 2007).

Although there is somewhat a consistent relationship between histopathological type and anatomical localization, 82% of total lesions are in head and neck region. This rate goes up to 91% when SCC and BCC considered separately. High frequency of non melanocytic lesions in head and neck region is a well known issue (Coebergh et al., 1991; Halder and Bridgeman-Shah, 1995; Gray et al., 1997; Ceylan et al., 2003; Koh et al., 2003; Omari et al., 2006). Solar radiation is an important etiological factor of non melanocytic lesions. In head and neck region exposure to solar radiation occurs in a direct and continuous fashion. Thus increasing non melanocytic lesions frequency. Increase in the amount and density of solar radiation significantly increases the incidence of SCC and BCC. It is hypothesized that chronic exposure to sun-light forms major risk for both SCC and BCC. While dealing with the effect of solar radiation it must be remembered that, genetic predisposition, immunosuppression, geographical distribution, skin characteristics and eye colour are also important factors in etiology (Halder et al., 1995; Holme et al., 2000; Armstrong and Krickerb, 2001; Katalinic et al., 2003; Leiter and Garbe, 2008; Gon and Minelli, 2011).

In the head and neck region 48% of BCC lesion are located on nasal and periorbital regions. Also 41% of head and neck SCC lesions are located on lower lip and 14% on auricular and periauricular regions. There were no eminent locations of head and neck MM lesions. Kennedy and Bajdik. (2001) reported that; 21% of all BCC lesions are on nose and 18% are on the remaining areas of head and neck region. Also, 18% of SCC was detected to be in head and neck region (Coebergh et al., 1991). Staples et al. (1998) have concluded that, head and neck region is the primary location for both SCC and BCC (Staples et al., 2006). As an interesting finding, the vast majority (81%) of scalp lesions of all types is detected in male population. A reasonable explanation for the case can be the high prevalence of skin malignancy in male population. In addition, the difference between traditional clothing attitudes of both sexes can be a factor in determining radiation exposure of scalp region.

Substantial amount of NMSC were seen mostly in 5, 6 and 7<sup>th</sup> decades of life (n:761, 71%). The main sources of revenue in our region are farming and agriculture, both of which are outdoor activities significantly subjected to sun exposure.

In conclusion, although substantial amount of our findings correlate well with prominent literature, given descriptive analysis as an initiative nature for introducing data of NMSC in the above defined region has increased the importance of our study.

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