Frequency Trends of Basal Cell Carcinoma, Squamous Cell Carcinoma and Melanoma in Korea, between Mid-1980s and Mid-1990s

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Background **: Malignant skin cancers in Korea have been increasing as in other countries, but the previous epidemiological studies have been only attempted by a single hospital unit in a limited period of time.**

Objective **: This study aimed to investigate and compare the frequencies, age, sex distribution, and anatomical location of the frequent skin cancers collected from several hospitals over a 10 year period between 1984-5 and 1994-5.**

Methods **: 258 cases of skin cancer from 4 different places in Seoul were collected for the study. Histopathological records from pathology departments and medical records were reviewed to obtain information about the frequencies.**

Results **: Overall there were 141 cases of squamous cell carcinoma (SCC), basal cell carcinoma (BCC), and malignant melanoma (MM) in the mid-eighties and 117 in the mid-nineties. SCC was the most common skin cancer in both periods but the frequencies and the SCC/BCC ratio dropped at the later period. The ratio of males to females was getting smaller at 1.4:1 in the mid-eighties and 1.1:1 in the mid-nineties. BCC was concentrated on the face and SCC was rather evenly distributed over the body surface. The predilection site of malignant melanoma (MM) was quite different between the two periods. The lower extremities was the main site in the mid-nineties and the head and neck in the mid-eighties.**

Conclusion **: Although there was no statistical significance, the BCC/SCC ratio was increased and the male/female ratio decreased at the later period.**

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Key Words : Frequencies, Squamous cell carcinoma, Basal cell carcinoma, Melanoma

There is no nationwide survey of malignant skin tumors in Korea. Previous reports were based on the studies attempted in a single hospital unit for a certain consecutive period. The first study[1] was done in 1972 for a period of 6 years by Pusan National University Hospital and the last one[2] in 1998 for 6 years by Seoul National University Hospital.

The present study investigated and compared the frequent skin cancers collected from 4 different places in Seoul over a 10 year period between 1984-5 and 1994-5.

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MATERIALS AND METHODS

Cases diagnosed as basal cell carcinoma (BCC), squamous cell carcinoma (SCC) and malignant

melanoma (MM) were included in this study. Clinical and histological records were examined retrospectively. The records were obtained from 3 university hospitals and one medical center in Seoul; Seoul National University, Hanyang University, Korea University, and National Medical Center.

The frequencies, age and sex distribution, and anatomical location of the above 3 cancers were compared over a 10 year period between 1984-5 and 1994-5.

The statistical analysis was done using the Chisquare test.

RESULTS

1) The frequencies

In the mid-eighties, SCC was the highest in order of frequency (83 cases), followed by BCC (46 cases) and MM (12 cases). They came to 59, 49, and 9 in order in the mid-nineties, showing a little increase of BCC and a marked decrease of SCC in frequencies (Table 1). However, the ratio of BCC/SCC was not statistically significant (p Value, 0.13).

Table 1. The frequencies of BCC, SCC, and MM between 1984-85 and 1994-95

	1984-85	1994-95	Remark
BCC	46 (32.6)	49 (41.9)	↑
SCC	83 (58.9)	59 (50.4)	↓
MM	12 (8.5)	9 (7.7)	↓
Total	141 (100)	117 (100)	

2) Sex and age distribution

The ratio of males to females decreased from 1.4:1 in the mid-eighties to 1.1:1 in the mid-nineties without statistical significance (p Value, 0.41) (Table 2).

The overall frequency increased suddenly at the ages over forty. The peaks were in the fifties at the earlier period and over sixty at the later period (Table 2).

3) Anatomical location

(1) SCC

It occurred most frequently on the head and neck showing 49.4% at the earlier period and 45.8% at the later one. The lower extremities were involved next (Table 3-1).

(2) BCC

Most of the BCC were seen on the head and neck (95.7% at the earlier period and 89.8% at

Table 2. Age and sex distributions of BCC, SCC, and MM

Age (years)	1984-85 Total (M/F)	1994-95 Total (M/F)
0-19	1 (0/1)	1 (1/0)
20-29	6 (0/6)	1 (0/1)
30-39	14 (7/7)	9 (6/3)
40-49	17 (13/4)	12 (10/2)
50-59	39 (26/13)	30 (21/9)
60-69	35 (19/16)	32 (12/20)
70<	29 (16/13)	32 (14/18)
Total	141 (81/60)	117 (64/53)

Table 3-1. The predilection sites of BCC, SCC and MM

	BCC		SCC		MM	
	80*	90**	80*	90**	80*	90**
Head & neck	44(95.7)	44(89.8)	41(49.4)	27(45.8)	7(58.3)	0(0)
Trunk	2(4.3)	5(10.2)	1(1.2)	0(0)	3(25.0)	3(33.3)
U/Ex[a]	0(0)	0(0)	7(8.4)	5(8.5)	0(0)	1(11.1)
L/Ex[b]	0(0)	0(0)	26(31.3)	20(33.9)	2(16.7)	5(55.6)
Others	0(0)	0(0)	8(9.6)	7(11.8)	0(0)	0(0)
Total	46(100)	49(100)	83(100)	59(100)	12(100)	9(100)

* Number of cases seen in 1984-5

** Number of cases seen in 1994-5

[a] upper extremities

[b] lower extremities

Table 3-2. Regional distribution of BCC

Sites	80*	90**
Head	42 (91.4)	44 (89.8)
Cheek	9 (19.6)	11 (22.5)
Nose	11 (23.9)	17 (34.7)
Ear	3 (6.5)	3 (6.1)
Eyelid	9 (19.6)	5 (10.2)
Forehead	2 (4.4)	3 (6.10
Lip	4 (8.7)	1 (2.0)
Scalp	4 (8.7)	4 (8.2)
Neck	2 (4.3)	0 (0)
Others	2 (4.3)	5 (10.2)
Total	46 (100)	49 (100)

* Number of cases seen in 1984-1985
** Number of cases seen in 1994-1995

Table 4. The BCC/SCC ratio in Korea

BCC/SCC ratio	Work-up duration	Author
0.25	1966-1971	Sung HS[1], 1972
0.5	1968-1977	Kim YP[8], 1978
1.4	1973-1983	Cho KH[7], 1984
0.8	1978-1987	Kim CP[10], 1988
0.5	1973-1986	Han YS[11], 1988
0.9	1980-1989	Kim KS[9], 1990
1.5	1984-1989	Chung JH[3], 1991
1.0	1979-1991	Shin JK[12], 1992
1.5	1983-1992	Kwan HC[13], 1993
2.2	1984-1993	Lee YC[14], 1995
1.0	1981-1994	Lim MK[15], 1996
3.3	1985-1994	Lee JB[16], 1996
1.9	1990-1995	Moon SE[2], 1998

the later one). In detail, the nose took the lead and the cheek followed. The trunk was involved in 4.3% and 10.2% of cases, respectively. No site other than the head and neck and the trunk was involved (Table 3-1).

(3) MM

The vulnerable sites showed marked differences between the two periods: the lower extremities were involved in 16.7% of cases at the earlier period and 55.6% at the later one, and the head and neck in 58.3% and 0% of cases, respectively.

DISCUSSION

Domestic reports stated that malignant skin cancers have been increasing as in many other countries[3]. The present survey aimed to make up for the lack of data in previous studies. Materials were obtained from all departments of three university hospitals and one medical center. The results were compared over a 10 year period between 1984-5 and 1994-5.

The BCC/SCC ratio is influenced by ethnic and geographic factors[4]. The incidence of BCC has risen more rapidly than that of SCC in the U.K. (235%/153%) over the last 14 years between 1978 and 1991[5]. This tendency was outstanding in Japan[6]. Our study showed similar changes in the BCC/SCC ratio as it was 0.5 in the mid-eighties and 0.8 in the mid-nineties, and previous sporadic reports in Korea also showed that the BCC/SCC ratio had increased showing some statistical differences (Table 4). Not only the ratio but also the actual number of BCC had increased as in other reports[2]. Besides the BCC, we also need to watch the incidence of SCC carefully, because of a recent increase in the frequencies of actinic keratosis[2,7].

Men had been more susceptible to BCC and SCC, but women are getting susceptible to the cancer associated with an increase in their outdoor activities[3]. Domestic survey about the male/female ratio showed that BCC, SCC, and MM had decreased, as it was 1.4 between 1968 and 1977[8], 1.5 between 1980 and 1989[9], and 1.2 between 1990 and 1995[2]. Our results also showed a decrease in the male/female ratio from 1.4 in the mid-eighties to 1.1 in the mid-nineties.

The age distribution in our study is similar to other reports in Korea[1-3,7-16] and Japan[6].

Epidemiological studies have shown that both BCC and SCC are induced mainly by chronic repeated sun exposure, although the former is directly related to sun exposure and the latter is multifactorial[17]. It is uncertain why BCC involved the trunk more frequently at the later period as reported in one paper[18]. SCC is also influenced by preceding diseases, such as burn scars, chronic radiodermatitis, and traumatic scars[15,19]. The distribution of BCC and SCC along with the results of sex ratios from this study may suggest similar etiological factors.

There are four types of MM; lentigo maligna, su-

perficial spreading melanoma, nodular melanoma, and acral-lentiginous melanoma[20]. UV radiation plays a major role in the developement of certain types of melanoma. However some kinds of melanoma like the acral-lentiginous type develop on the palms, soles, and nail beds[21]. The predilection site of our cases being the lower extremities in the mid-nineties was similar to other reports[2-3,7-11,13,22], but was quite different in the mid-eighties where the head and neck were the main site.

CONCLUSION

The frequencies, age and sex distribution, and anatomical location of SCC, BCC, and MM were surveyed over a 10 year period between 1984-5 and 1994-5. The BCC/SCC ratio was increased and the male/female ratio decreased at the later period without statistical significance. BCC was concentrated on the face and SCC was rather evenly distributed over the body surface. The predilection site of MM was quite different in both time periods. It was the head and neck in the earlier period and the lower extremities in the later period.

Further population-based epidemiological studies in Korea are certainly necessary to clarify the prevalence and the risk factors for BCC, SCC, and MM.

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