

Primary Facial Skin Cancer: Clinical Characteristics and Surgical Outcome in Chungbuk Province, Korea

Clinical features of facial skin cancer in Asian population including Korean are not readily available. In the present study, we analyzed the clinical characteristics and the surgical results of primary facial skin cancer in Chungbuk Province, Korea. Eighty-six cases of primary facial skin cancer collected during a 10-yr period (1994-2003) were retrospectively reviewed about the clinical characteristics including age, sex, annual diagnostic rate, types of tumor, specific sites of occurrence, and the surgical results. The average age at the diagnosis was 67 and male to female ratio was 1 to 1.05. The average annual diagnostic rate was 0.73% and the rate surged during the period 2001-2003 compared with the period 1994 to 2000. Basal cell carcinoma was the most common tumor and the nose was the most frequent site. Traditional surgical excision with immediate reconstruction was performed in 81 cases. During the 23 months of average follow-up, three patients had recurrences (3.7%) and three patients had secondary skin cancers. Facial skin cancer is increasing in the province and basal cell carcinoma is most frequent. Traditional surgical excision and immediate reconstruction with local flap are a good therapeutic modality with an acceptable recurrence rate.

Key Words : Skin Neoplasms; Face; Carcinoma, Basal Cell; Carcinoma, Squamous Cell; Mohs Surgery

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INTRODUCTION

Development of primary skin cancer is the result of interplay between environmental and genetic factors. These factors include ultraviolet (UV) exposure, carcinogens, race, age, gender, and decreased DNA repair capacity, among which UV radiation is considered the primary risk factor for this lesion. It has been reported that the incidence of primary skin cancer among Asians including Korean is lower compared with the Caucasians (1). In Korea, the primary skin cancer comprises about 1.44% of all malignancies diagnosed annually (2) and its diagnostic rate has been estimated as 0.085 to 1.02% per all dermatology department visits with a recent continuous increase (3-9).

Though face is a well-known predilection site for the primary skin cancer due to the continuous exposure to UV radiation, clinical features of facial skin cancer in Korean are not readily available. Mohs' surgery is known to be the standard treatment for facial skin cancers in western country but traditional surgical excision is more frequently used in Korea. Face needs special attention in treatment of skin cancer to achieve acceptable cosmetic and functional results after the excision. Treatment methods and results of facial skin cancer in western population are well known (10-12), but information from Asian population including Korean are sparse

and needs further establishment.

In this study, we analyzed the clinical characteristics and treatment results of 86 patients with primary facial skin cancer collected during a 10-yr period in Chungbuk Province, which is located in the center of Korea.

MATERIALS AND METHODS

The study population consisted of a subset of 86 patients with previously untreated primary facial skin cancer. The patients were diagnosed as primary facial skin cancer by tissue biopsy from January 1994 through December 2003 at the Department of Dermatology, Chungbuk National University Hospital. Eighty-two of 86 patients were treated with traditional surgical excision and immediate reconstruction by the senior author or by residents under the supervision of the senior author. Basal cell carcinoma (BCC) was excised including 2-5 mm of normal skin around the lesion while excision of squamous cell carcinoma (SCC) included at least 5 mm, usually 10 mm of normal skin. All suspicious lateral and deep margins were confirmed to be tumor free by frozen section biopsies during the operation. Resection margins were confirmed with permanent biopsies after surgery. All patients with SCC had a metastasis work-up including neck CT scan.

Age and sex of the patients, diagnostic rate, changes in yearly diagnostic rate, types of primary facial skin cancer, sites of the lesion, surgical methods, and operative results were analyzed retrospectively by reviewing clinical charts of the patients. Analyzed results were compared with the previously reported data in Korea.

RESULTS

Between 1 January 1994 and 31 December 2003, the total number of new patients who visited the Dermatology Department was 11,803, of whom 86 patients were newly diagnosed as primary facial skin cancer with an average diagnostic rate of 0.73%. Annual diagnostic rate showed continuous increase during the period of investigation except the year 2001, during which the hospital had big difficulties due to a long-lasting labor strike (Fig. 1). Dividing the study period into two parts, an average annual diagnostic rate was 0.47% from 1994 through 2000 and 1.16% from 2001 through 2003 showing more than two-fold increase ($p < 0.05$; Mantel-Haenszel chi-square test).

Forty-two patients were male and 44 were female. The age range was from 33 to 89 yr. Of the 86 patients, 21 (24%) were in sixties and 23 (27%) were in seventies, with an average age of 67 yr (56 in men and 78 in women) (Fig. 2). The average age of the patients with SCC was 75 yr (71 in men and 81 in women) while that of BCC was 64 yr (62 in men and 67 in women). Of 61 BCC patients, 23 (38%) were in the sixties while 11 (50%) from 22 SCC patients were in the eighties. Yearly changes in average age of the patients were not significant.

BCC was the most common type comprising 71% (61 of 86 cases) followed by 22 cases (25%) of SCC, one case of BCC

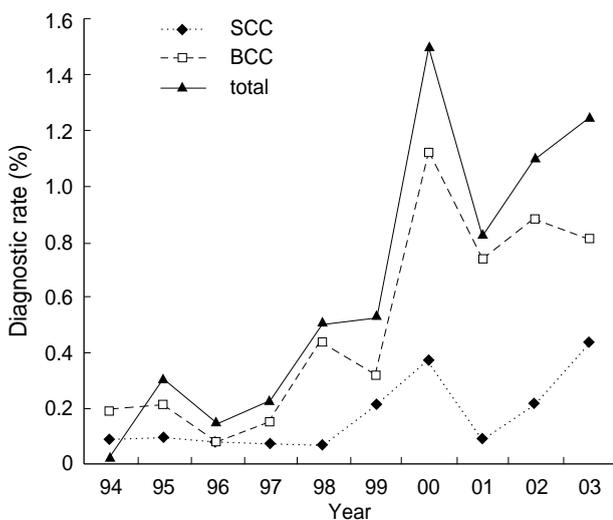


Fig. 1. Annual diagnostic rate of facial skin cancer from 1994 to 2003 in Chungbuk Province, Korea. BCC, basal cell carcinoma; SCC, squamous cell carcinoma.

combined with SCC, one case of trichilemmal carcinoma, and one case of verrucous carcinoma.

Among 86 patients, seven patients had two or more lesions in their faces making the total number of the lesions 94. Among them, nose was the most frequently affected site (29 out of 94 lesions, 31%) followed by cheek (22 lesions), periorbit (13 lesions), and forehead (10 lesions). Nose was the most frequently affected site by BCC (27 lesions, 38%) and cheek by SCC (10 lesions, 43%) (Fig. 3).

Traditional surgical excisions, not Mohs' surgery, were performed for the treatment of primary facial skin cancer in 82 patients (86 lesions). Only one lesion showed involvement of deep resection margin in permanent biopsy after surgical excision and reconstruction, which was operated again 2 weeks after the initial surgery. Skin defects after surgical excisions were reconstructed with local flaps in 45 lesions (51%), skin grafts in 25 lesions (28%), and primary closure in 19 lesions. Of 82 patients surgically treated, 75 were successfully followed-up, with an average follow-up of 23 months. Five of them (three SCC patients and two BCC patients) (7%) showed recurrences: three patients were treated by repeated surgical excisions, one by cryotherapy at the Department of Dermatology, and one by close follow-up without any treatment to the end of the study. There was no statistical difference in the recurrence rate between the BCC patients and SCC patients ($p > 0.05$; Fisher's exact test). Second primary skin cancers were found in three patients (4%), two in other sites of face that were not affected by the original primary skin cancer, and one in the back. The former two patients were treated by surgical excisions and the latter one patient was lost to follow-up.

Reconstructions after surgical excisions were mostly successful without any significant functional or aesthetic deformity. Except for acceptable scars on the face, three cases showed definite complications: one case of flap necrosis healed by

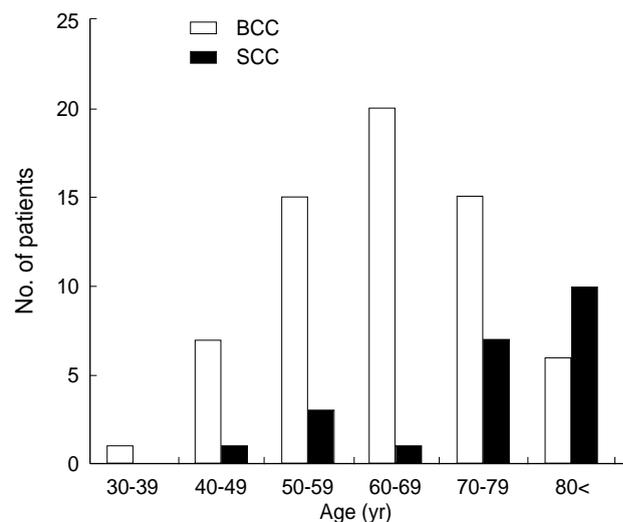


Fig. 2. Age distribution of primary facial skin cancer patients from 1994 to 2003 in Chungbuk Province, Korea. BCC, basal cell carcinoma; SCC, squamous cell carcinoma.

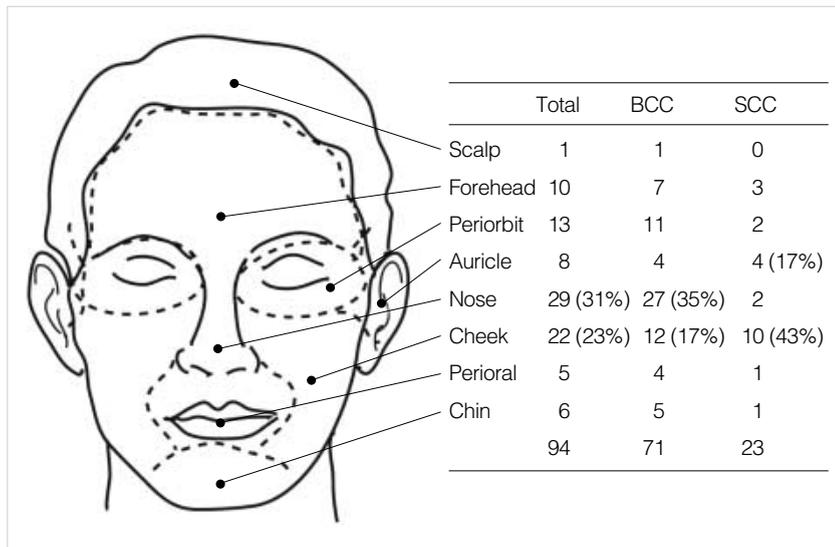


Fig. 3. Specific sites of occurrence of primary facial skin cancer from 1994 to 2003 in Chungbuk Province, Korea (n=94). BCC, basal cell carcinoma; SCC, squamous cell carcinoma.

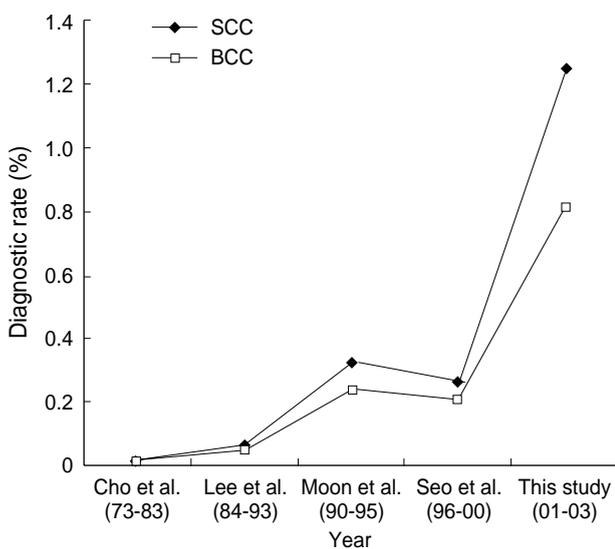


Fig. 4. Diagnostic rate of facial skin cancer in chronological order in previously published articles and this study. BCC, basal cell carcinoma; SCC, squamous cell carcinoma.

secondary healing, one case of scar contraction properly settled without additional operations, and one case of flap contraction which needed a second operation.

DISCUSSION

Several studies have reported that the incidence of primary skin cancer is increasing worldwide (3-9, 13). These tendencies can be attributed to increased exposure of skin to UV radiation caused by lengthened life span and increased outdoor leisure hours, growing public understanding about skin cancer, and increased contact to various carcinogens in the food and environment. In Korea, the incidence of primary

skin cancer varies according to the reporting institutions, but when chronologically filed, they have an increasing tendency (Fig. 4) (9). The increasing annual diagnostic rate in our study reflects this worldwide tendency (14). Our high average diagnostic rate compared to other reports in Korea (9) can be attributed to a few reasons. First, our hospital is the only medical facility where diagnosis of primary skin cancer and its treatment such as surgical excision are feasible in our community. Second, because a large proportion of population in our community is engaged in farming, they have more chance to have an excessive exposure to UV radiation. Third, the proportion of old ages to young is higher than other districts that are more urbanized (15).

In this study, 70% of all facial skin cancers were BCC which is a similar result compared with other reports in which BCC presents 80-94% of all facial skin cancers (3-9). No cases were diagnosed as malignant melanoma, which reflects the fact that the face is not the predilection site of malignant melanoma. Other studies in Korea reported similar results (3-9) and according to one report, the foot was the site of predilection (9).

Primary skin cancers including face affect mainly old ages. Skin of elderly people has been exposed to UV radiation for a longer time and is more susceptible to cancer (16). The average age of the patients in this study, 67 yr, is almost 10 yr older than those from other reports, which is another proof that our community has more old-aged population as mentioned above (6-9). Though male to female ratio was similar in our study, there have been recent reports about increased incidence of primary skin cancer in women (9), which is explained by the longer average life span and recent strikingly increased social activities and outdoor leisure time of women.

Mohs' surgery, traditional surgical excision, radiotherapy, cryosurgery, curettage and electrodesiccation, topical chemotherapy, or laser therapy can be used for the treatment of skin

cancers. Though Mohs' surgery has been reported to represent higher cure rates than others (17), it is available in only a few university hospitals in Korea because the numbers of Mohs' surgeons are few and the medical insurance does not fully cover the fee. Traditional surgical excision method is not as complete as Mohs' surgery in tumor control, but it also has many advantages: the operation time is short, it can be done under local anesthesia without hospitalization, and the defect can be reconstructed immediately. The recurrence rate of our study was slightly higher than that of Mohs' surgery (18, 19), but similar to the result of other conventional surgical method (11, 12). Confirmation of the surgical margin with frozen section biopsies and excision of the lesion with enough safety margins can contribute to the lower recurrence rate.

The patients with primary skin cancer should be closely and regularly followed-up because the incidence of second primary skin cancer is known to be 36-52% in 5 yr after the initial diagnosis (20). In the present study, the incidence of second primary skin cancer was quite low compared with other reports. Relatively short follow-up due to the regional characteristic and the low incidence of skin cancer itself in Koreans compared to the Caucasians can explain this.

Skin defects after surgical excision can be reconstructed by secondary healing primary closure, skin graft or local flap. Choice of reconstruction method depends on tumor variables such as location, size, and histological type of the tumor and patient variables including age and medical status. As shown in our study, reconstruction by local flap is the most frequently used method because it gives superior functional and aesthetic outcomes. With proper analysis of the defect and design of the flap, the defect can be reconstructed with satisfying aesthetic results.

In summary, in Chungbuk Province, Korea, the detection of primary facial skin cancer is increasing by year, and the majority of them are BCCs. Traditional surgical excision is an acceptable method for the treatment of primary facial skin cancers considering the paucity of Mohs' surgeon. Facial defects caused by surgical excisions can be adequately reconstructed using appropriate methods such as local flap. Teamwork between the dermatologist and the facial plastic surgeon from the initial step of diagnosis to the final treatment and follow-up plays a crucial role in successful management of facial skin cancer.

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