Kazuyuki Ishihara · Toshiaki Saida · Fujio Otsuka
Naoya Yamazaki · The Prognosis and Statistical Investigation Committee of the Japanese Skin Cancer Society

Statistical profiles of malignant melanoma and other skin cancers in Japan: 2007 update

Received: November 29, 2007

Abstract
Background. In the previous report of the Prognosis and Statistical Investigation Committee of the Japanese Skin Cancer Society, we tabulated data on patients with malignant melanoma who had been registered at major medical institutions (22 institutions on average) in Japan over 5-year periods from 1987 to 1991 (group A) and from 1992 to 1996 (group B). In the present study, patients registered from 1997 to 2001 (group C) were investigated and the data were compared with findings obtained by the subsequent follow-up of groups A and B.

Methods. The numbers of melanoma patients registered were: 545 in group A (1987–1991), 699 in group B (1992–1996), and 821 in group C (1997–2001). Because the International Union Against Cancer (UICC) TNM and stage classifications for malignant melanoma were changed substantially in 2002, analyses in the present investigation were performed according to the new classifications. The Kaplan-Meier method was used to draw survival curves, and the log-rank test was used to assess the significance of differences in survival. In addition, the numbers of patients with various kinds of skin malignancies, including not only malignant melanoma but also basal cell carcinoma, squamous cell carcinoma, mycosis fungoides, actinic keratosis, Bowen’s disease, and Paget’s disease, registered at approximately 100 medical institutions in Japan from 1987 to 2001, were also investigated and data were tabulated.

Results. The nationwide survey of Japanese patients with malignant skin tumors from 1987 to 2001 showed that the most prevalent skin tumor was basal cell carcinoma, which increased year by year, followed by squamous cell carcinoma, and then by malignant melanoma. The following results were obtained from the data for melanoma patients registered at major institutions from 1987 to 2001. (1) The overall 10-year survival rates for melanoma patients in each chronological group were ranked as: group C > B > A, although only the difference between groups C and A was statistically significant. (2) The male-to-female ratio ranged from 1:0.97 to 1:1.14, and the survival rate of female patients was higher than that of male patients (the 140-month survival rate was 70.6% in females and 60% in males). (3) Assessment of the age distribution showed that the number of patients increased rapidly from ages 40–49 years and reached a peak at around 60 years in all three groups. (4) The sole of the foot was the most common site of melanoma in both males and females, while melanomas on the lower limbs were also prevalent in females. (5) Acral lentiginous melanoma (ALM) was the most common type in all three groups, accounting for nearly 50% of the patients in each group. The number of patients with superficial spreading melanoma (SSM) increased steadily over time and exceeded the number of patients with nodular melanoma (NM) in group C. The prognosis of NM was the worst, while that of SSM was the most favorable. (6) The proportion of stage I patients was larger in group C than in groups A and B, but no significant difference among the groups was observed in the proportions of stage II, III, and IV patients. For patients in stage III, the overall survival rate was higher in group C than that in group A or B, while there was no apparent difference in survival between the groups for patients in stage I or II. For patients in stage IV, the survival rate in group C was slightly lower than that in group A or B. (7) In group C, the overall survival rates for substages III A, B, and C were ranked as IIIA > IIIB > IIIC. (8) The overall survival rates for stage IV M1a,
M1b, and M1c were ranked as M1a > M1b > M1c. In group C, the overall survival rate of stage IV patients with a normal serum lactic dehydrogenase (LDH) level was higher than that of patients with elevated LDH values. (9) Evaluation of the effects of some therapeutic procedures (prophylactic lymph node dissection and chemotherapy with and without interferon-beta) on the survivals of patients with melanoma was inconclusive and suggested the need for more studies in this area.

**Conclusion.** In Japan, the number of patients with malignant skin tumors has increased year by year. The prognosis of patients with advanced malignant melanoma remains extremely poor, but that of patients in stage III has shown an improvement.

**Key words** Malignant melanoma · Japanese population · Statistical survey · TNM classification · Survival rate

**Introduction**

In 1974, Kawamura et al.⁰ published the first report concerning the statistical investigation of malignant skin tumors in Japan. Ishihara et al.¹ started statistical investigations in 1975, and their data were reported in 1989. Since 1987, the Prognosis and Statistical Investigation Committee of the Japanese Skin Cancer Society has taken the lead in performing nationwide surveys.²⁻⁸ In an article published in 2001,⁹ we reported the results of nationwide epidemiological surveys of skin cancers in Japan. In the present article, we report the latest updated data of our study.

Our nationwide statistical surveys of skin malignancies have two components. One is a study of the prevalence of various kinds of skin malignancies in the Japanese population, with patients registered at approximately 100 medical institutions in Japan (a total of 101 medical institutions in 1987–1996 and 97 institutions in 1997–2001). Data have been tabulated every year from 1987 to 2001. The skin malignancies investigated include basal cell carcinoma (BCC), squamous cell carcinoma (SCC), malignant melanoma, sweat gland carcinoma, mycosis fungoides, adult T-cell leukemia, other cutaneous lymphomas, and Merkel cell carcinoma. Actinic keratosis, Bowen’s disease, and extramammary Paget’s disease were also included. The other component is a detailed investigation of Japanese melanoma patients, which is mainly performed by the Japan Melanoma Study Group, which consists of specialists working at 21–24 major medical institutions in Japan. The collected data have been tabulated every 5 years, as follows: 1987–1991 (group A), 1992–1996 (group B), and 1997–2001 (group C). Parameters investigated have included sex, age, lesion site, Clark’s subtype, disease stage, overall survival rate, and effect of treatment on survival. Patients have been followed up for 5–10 years to determine survival.

**Prevalence of malignant skin tumors in the Japanese population**

The number of Japanese patients with various kinds of skin malignancies was analyzed, based on the data obtained from 101 medical institutions in 1987–1996 and 97 institutions in 1997–2001. Table 1 shows the numbers of patients in group A (1987–1991), group B (1992–1996), and group C (1997–2001). Figure 1 displays the annual registered numbers of Japanese patients with BCC, SCC, malignant melanoma, and mycosis fungoides. Of these four main malignancies, BCC was the most prevalent, and the number of patients with this tumor increased every year. BCC accounted for more than 44% of the four main skin malignancies. The number of patients with SCC also increased year by year, accounting for 28% or more of the patients with the four malignancies, and patients with malignant melanoma accounted for approximately 20% of these four main skin malignancies.

Figure 2 displays the number of patients with actinic keratosis, Bowen’s disease, and extramammary Paget’s disease.