

Melanoma among Pacific peoples

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Introduction

Malignant melanoma is a neoplasm involving melanocytes of the epidermis. Melanocytes are responsible for synthesizing melanin, the normal pigment of skin, while also giving rise to numerous benign lesions such as naevi, lentigo, etc. Carcinogenesis is related to sun damage to the skin, through ultraviolet radiation. It appears that intermittent sun exposure early in life has a more deleterious effect than constant exposure later in life.

The incidence of melanoma appears to be rising worldwide, while mortality rates have remained relatively constant^{1,2,3}. Because most melanomas are diagnosable at an early, curative stage by direct inspection of skin, mortality is thus preventable through preventative screening, coupled with a high index of suspicion.

Epidemiology in the Pacific

Information on the precise incidence and prevalence of melanoma in the Pacific is difficult to come by. Only four Pacific countries, Papua New Guinea, Fiji, New Caledonia⁴ and New Zealand presently maintain cancer registries.

The New Zealand registry is a particularly valuable source because of the large Pacific population. The Australian cancer registries, as yet, do not list Pacific peoples as a separate demographic category. Data collection on melanoma in New Zealand illustrate the complexities involved in cancer statistics recording and analysis.

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New Zealand has one of the better health data collection systems in the Pacific, and therefore provides a useful case study of the problems involved in analyzing melanoma rates in Pacific people. The geographic location of New Zealand is at least 15° latitude. Therefore we need to consider different levels of exposure to ultraviolet radiation in attempting to make inter-island comparisons. Exposure decreases with increasing latitude both because of lower intensity radiation at ground level and because of the temperature dependent changes in human behavior.

The means by which data on melanoma are captured will influence the incidence rates recorded. In New Zealand, three major health information systems contribute to the available statistics on melanoma (Ministry of Health 1996):

Hospital morbidity data: Data on the number of hospitalizations for melanoma are taken from both public and private hospitals, and include inpatients, day patients, and operations performed. Because the count is of episodes of care rather than of individual people, it does not discriminate re-admissions for the same condition, nor of patients who are transferred to another hospital, and are therefore counted

twice. The number of operations performed is underestimated in these data, because only three operations per hospitalization are recorded for public hospitals and one for private hospitals.

Mortality and demographic data: New Zealand law requires death to be reg-

istered within three days of the burial in a city or borough, or seven days in any other case, with no time limit after which a death may not be registered. This leads to small variations in number of registrations, on which national mortality statistics are based, and the number of deaths per year.

Cancer data: The National Cancer Registry (NCR) of New Zealand, established in 1948, contains a record of all people who develop cancer (except basal and squamous cell skin cancers). The coverage of the NCR data in recent years has been limited by about 10% under-reporting of cancers diagnosed in private laboratories and surgical clinics.

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The classification of ethnicity in the above health information systems is derived differently, and must be treated with caution. For example, in data series from public hospital discharges, ethnicity is based on self-nominated data or guesses based on surname or appearance. Up-to-date, accurate and adequately detailed statistics on melanoma form an essential management tool for the control of this cancer in New Zealand, including direct initiatives in primary prevention and early diagnosis and treatment.

Among Caucasians living in the Pacific a latitude gradient has been found, with increasing incidence of melanoma proportional to closeness to the equator⁵. A similar finding has been reported among non-Maori New Zealanders, with melanoma being commoner in the warmer more northerly parts of the country⁶. A similar geographic gradient has not, as yet, been described for Pacific peoples.

Clinical considerations

Melanoma often presents as a dark macule, a change or enlargement of an existing pigmented lesion, or a non-healing ulcer. There may be an irregular scalloped outline, and while the colour is often dark brown to black, melanomas may show any variation of red, white, and blue. Screening for malignant melanoma is by external visual inspection of the skin. Together with cervical and breast carcinoma, melanoma is one of the few cancers where screening, to detect a malignancy at an early treatable stage, has proven cost-effective.

There are four main histologic types of melanoma: superficial spreading (the commonest form in Caucasians), nodular (the most lethal), melanoma in Hutchinsons freckle (a lower grade lesion found on the face of older people), and acral lentiginous melanoma, the commonest type in Pacific people, Japanese, and Africans. Acral lentiginous melanoma characteristically occurs on the volar surfaces of the hands and feet (palms and soles), subungual (beneath a nail) and mucous membranes (mouth, anus, and vagina). This is in contrast to superficial spreading melanoma, which has a predilection for sun-exposed areas such as head, neck, back, arms and legs.

Acral lentiginous melanoma is the predominant one found in dark races. Studies in South Africa⁶, Nigeria^{7,8} showed this variety affecting the soles of the feet, was virtually the only melanoma encountered. Di Schino, et al. reported similar findings from New Caledonia Melanesians, of acral lentiginous melanoma affecting the soles of feet and mucous membranes⁹. In an interesting paper from the island of

Bougainville, North Solomons Province, PNG, the authors found that all melanomas arose from the sole of the foot, and were advanced at the time of presentation¹⁰. They further postulate that the very low overall incidence of skin cancer in Bougainville is related to the protective effect of melanin in this very deeply pigmented group. Charles and Elpern note that acral lentiginous is the most common variant among non-Caucasians in Hawaii¹¹.

Wide excision remains the treatment of choice, though how wide is still debatable, and depends on the site. Regional lymph nodes should be excised if clinically involved, though the value of prophylactic dissection of uninvolved lymph nodes is unresolved. Melanoma has proved resistant to chemo- and radio-therapy, even though the occasional dramatic cure is reported. Recently there has been some progress in immunotherapy, including vaccinating against melanoma using tumor-derived antigens.

Numerous prognostic factors assist the clinician in predicting the likelihood of curing melanoma. Stage is probably the most important, with stage I being localized to skin, stage II involving regional nodes, and stage III being distant metastases. The histologic report of the excised lesion contains several other prognosticators: the thickness in mm, if below 0.76 mm, implies a greater than 98% five-year survival, with survival decreasing with thicker lesions. The microanatomic level is likewise an independent variable, ranging over five levels from intra-epidermal, with the best cure-rate, to subcutaneous involvement, being the worst. Ulceration and increased mitotic figures imply poorer prognosis, while lymphocytic infiltration is indicative of host immune response to the tumour, and is therefore a

hopeful finding. Interestingly enough primary melanomas may occasionally regress, though this is not associated with better survival. Sometimes a patient will present with widespread metastases from a primary cutaneous melanoma that has completely regressed.

Discussion

While malignant melanoma is characteristically induced by sun damage to fair skin, it has a lower though significant incidence in Pacific peoples. Huerre, et al. report a global incidence of 1.65/100.000 (males) and 1.05/100.000 (females) for Melanesians and Polynesians⁴. The comparative higher incidences for Europeans are 9.82 and 7.65/100.000 for males and females respectively. Given a mortality of over 40% even the lower figures are significant.

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Of the several clinico-pathologic types of melanoma, acral lentiginous, affecting mostly the soles of the feet, is the commonest among Pacific peoples. The location, as well as lower level of clinical suspicion in this setting, might contribute to the relatively late diagnosis at an advanced stage of these malignancies. Though accuracy and completeness of epidemiologic reporting vary among Pacific jurisdictions, existing data give clear evidence that melanoma not only occurs among indigenous populations, but carries with it a significant mortality rate.

New Zealand Health Ministry data indicate a melanoma rate in Maoris almost three times that of Pacific peoples: 3.5 compared to 1.2 per 100,000 per year 1991-1994 (Public Hospital discharges, malignant melanoma, ICD-9 code 172). Several explanations might be proposed for this: Maoris might have lost a UV-protective effect after generations of living in a colder climate, there might be better case reporting in this group, or the figures being relatively low for both groups would be more subject to random chance variation.

Conclusion

Malignant melanoma, together with cervical and breast carcinoma, is one of the few malignancies whose incidence and morbidity are reducible by currently existing screening methods, through diagnosis at an early and treatable stage. Though characteristically caused by sun-damage to light skin, this tumor does occur in darker skinned populations including Pacific peoples, where it unfortunately tends to be diagnosed late. Awareness and a higher index of clinical suspicion are needed in order to reduce the mortality from this skin cancer.

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“ A society that values planned teaching over autonomous learning cannot teach man to keep his engineered place ”

ILLICH, 1975