Nonpigmented skin lesions

How many are nonmelanoma skin cancer?

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BACKGROUND
Nonmelanoma skin cancer (NMSC) is the most common cancer in Australia and thus the most costly to treat. Despite the high prevalence of NMSC, little is known about the rate of malignancy in excised or biopsied nonpigmented lesions.

METHOD
An audit of 912 reports relating to nonpigmented skin samples from 749 patients processed during January 2005 in Tasmania.

RESULTS
Nonmelanoma skin cancer was present in 60.6% of samples from specialists and 44.5% from nonspecialists/primary care doctors ($p<0.001$); 1.6 skin lesions were excised or biopsied in order to identify one malignant or pre-invasive lesion (1.3 for specialists and 1.7 for nonspecialists). The number of NMSCs increased with age and were more common in men.

DISCUSSION
Medical practitioners are efficient in their management of nonpigmented skin lesions in both primary and secondary care.

Nonmelanoma skin cancers (NMSC) are the most frequently diagnosed cancers in Australia and their incidence is increasing.[1] Over 50% of the population will develop an NMSC in their lifetime[2] and 2% require treatment each year.[3] This results in NMSC being the most expensive cancer to treat.[4] The clinical diagnosis of NMSC is often difficult and has been shown to be inaccurate, even by specialist dermatologists.[5] Benign lesions such as keratoacanthomas and seborrheic keratoses are easily mistaken for squamous cell carcinomas (SCCs) and basal cell carcinomas (BCCs). Conversely, NMSC is frequently undiagnosed, even in highly visible sites.[6]

Accurate diagnosis of NMSC depends on histology, as does Medicare reimbursement.[7,8] Skin cancer care in Australia is provided in a wide range of primary care and specialist settings, and there has been much recent debate regarding the quality of care provided in each.[9] In Tasmania – where this study was conducted – there has not yet been a large scale expansion of specialist skin clinics. At the time of this study, all primary care of skin lesions was within traditional general practice (although some practices advertise a special interest in skin cancer care).

Much of the quality of care debate has so far been focused on melanoma skin cancers where it is known that a very large number of pigmented lesions are removed in order to identify melanomas. The rate of malignancy among excised pigmented lesions has been shown to be as low as 8%, requiring 12.5 lesions to be treated in order to identify one melanoma.[10] The removal of this large number of benign lesions may result in unnecessary procedures, patient suffering, and costs.

Despite the much higher incidence of NMSC, there is less known about the rate of malignancy among excised or biopsied nonpigmented lesions. The aim of this study was to determine the number of nonpigmented lesions excised or biopsied in a community setting and referred for histology in order to identify malignant and pre-invasive nonmelanocytic lesions.

Method

Histology reports relating to nonpigmented skin samples processed during January 2005 were accessed retrospectively from the database of two laboratories of the major skin histopathology provider in Tasmania. Both punch and excision biopsies were included. The number of NMSC notifications from these two centres was compared with the state total as reported to the Tasmanian Cancer Registry and it was found to represent 69% of SCCs (132/192) and 72% of BCCs (289/399) notified in Tasmania during that month.

Reports were included in the sample when they were

Table 1. Histologic classification of skin lesions

Diagnostic category	Histological diagnoses	Excised lesions n=582 (%)	Biopsied lesions n=330 (%)	All lesions n=912 (%)
Benign	Keratoses	16 (2.7)	24 (7.2)	40 (4.4)
	Keratoacanthoma	5 (0.9)	1 (0.3)	6 (0.7)
	Seborrheic keratosis (nonpigmented)	50 (8.6)	25 (7.6)	75 (8.2)
	Neurofibroma	4 (0.7)	0	4 (0.4)
	Scar tissue	2 (0.3)	2 (0.6)	4 (0.4)
	Dermatofibroma	25 (4.3)	5 (1.5)	30 (3.3)
	Chondrodermatitis nodularis chronica helicis	3 (0.5)	2 (0.6)	5 (0.5)
	Lichen simplex chronicus	9 (1.5)	6 (1.8)	15 (1.6)
	Sebaceous hyperplasia	1 (0.2)	3 (0.9)	4 (0.4)
	Verruca vulgaris	6 (1.0)	2 (0.6)	8 (0.9)
	Squamous papilloma	4 (0.7)	0	4 (0.4)
	Subtotal	125 (21.5)	70 (21.2)	195 (21.4)
Premalignant	Solar keratosis*	61 (10.5)	74 (22.4)	135 (14.8)
Pre-invasive	Squamous cell carcinoma in situ (Bowen's disease)	105 (18.0)	58 (17.6)	163 (17.9)
Malignant	Basal cell carcinoma	191 (32.8)	97 (29.4)	288 (31.6)
	Squamous cell carcinoma	100 (17.2)	31 (9.4)	131 (14.4)

* The exact classification of solar keratosis as premalignant or essentially benign remains contentious

Table 2. Histology by type of referring doctor

Type of lesion	Treated by nonspecialist n=633 (%)	Treated by specialist n=279 (%)
Benign lesion (n=195)	163 (25.8)	32 (11.5)
Solar keratosis (n=135)	103 (16.3)	32 (11.5)
SCC in situ (n=163)	109 (17.2)	54 (19.4)
SCC (n=288)	176 (27.8)	112 (40.1)
BCC (n=131)	82 (13.0)	49 (17.6)

the initial specimen received for any given nonpigmented lesion. They were not included if they related to an excision or re-excision following an earlier biopsy or incomplete excision, or if the macroscopic description included the term 'pigmented' (eg. pigmented seborrheic keratoses or pigmented basal cell carcinomas).

Data collected included the histological diagnosis, sample type (biopsy or excision), patient gender and date of birth, and category of referring doctor (specialist or nonspecialist). Diagnoses were categorised as 'benign', 'pre-malignant', 'pre-invasive' or 'malignant'. Results were analysed using SPSS for Windows™ release 11. Standard bivariate statistical tests (such as Pearson's correlation coefficient r, and Chi-square tests) were used for comparisons.

Results

A total of 749 patients had 912 nonpigmented skin samples examined by the participating laboratories in Tasmania during January 2005. The subjects had an average age of 64.7 years (SD=14.5) and 53.0% were male. Most subjects (84.2%) had only one skin lesion treated during the study period; one patient had six skin lesions treated.

Nonmelanoma skin cancer was more likely to be found in complete excision samples than in punch biopsy samples (at least one NMSC identified per patient: 53.0–41.6% respectively; p=0.011). The histological diagnoses of both excised and biopsied lesions are shown in *Table 1*. There were no instances found of rare lesions such as lymphoma and sarcoma of the skin, appendageal tumour, and amelanotic melanoma.

Three hundred and eighty-one patients (50.9%) had no malignant skin lesion identified by histology, 43.9% had one, 32 (4.3%) had two, four (0.5%) had three, one (0.1%) had four, and two patients (0.2%) had five NMSCs identified during the 1 month study period. The number of NMSCs identified increased with the age of the patient (R=0.17, p<0.001). Men were more likely to have NMSC identified compared to women (at least one NMSC identified: 57.7-39.5%; p<0.001).

A higher rate of NMSC was identified in samples collected by specialist doctors compared to nonspecialists (*Table 2*). There was a positive finding per patient sampled of 60.6% for specialists and 44.5% for nonspecialists (p<0.001). Overall, 582 of 912 lesions (63.8%) were malignant or pre-invasive (SCC in situ). Thus, 1.6 skin lesions were excised or biopsied in order to identify one malignant or pre-invasive lesion. For specialists the number needed to treat was 1.3 (215 histology positive from 279 lesions) and for nonspecialists the number needed to treat was 1.7 (367 of 633). Nonspecialist doctors generated 71.2% of pathology

referrals, resulting in 63% of identified NMSC and SCC in situ.

Discussion

The overall number needed to treat of 1.6 shows a high yield for detecting malignant or pre-invasive lesions from nonpigmented lesions. The comparable rate found for pigmented lesions in previous studies is 12.5.[10] This difference is probably due to the generally less aggressive course of NMSC and treating doctors' increased comfort level regarding the risk of missed lesions. The rate of positive histology was higher in males than females and increased with increasing age. This finding is consistent with the known incidence of NMSC.[1] The rate of totally benign lesions among nonpigmented skin samples was low at 22%.

This study did not have access to the treating doctor's reason for excision. It was assumed that nonpigmented samples referred for histology had been identified as potential NMSC or other skin tumours, however this may not always have been the case. Other reasons for excision may include cosmesis, itch, or patient request. However, lesions removed for these reasons may be less likely to be sent for histopathology.

The higher rate of malignancy among excision samples suggests doctors were more likely to excise lesions believed to be NMSC, while merely taking biopsies from lesions with a less certain clinical diagnosis.

It was found that the majority (63%) of NMSCs were identified in samples received from nonspecialist doctors (in Tasmania this largely represents general practitioners) which concurs with previous findings.[1] The number of lesions needed to treat was higher for nonspecialist (GP) than specialist doctors (1.7 compared with 1.3). This is likely to reflect the lower prevalence of NMSC in an unselected population attending nonspecialist doctors compared to the higher risk, filtered populations referred to specialists. It should not be assumed to reflect a difference in diagnostic accuracy.

These results suggest that medical practitioners are efficient in their management of nonpigmented skin lesions. There are few lesions sampled or excised unnecessarily. It is not known how many NMSCs remain undiagnosed but the number is believed to be substantial.[6] Efforts to further reduce the number of nonpigmented lesions sampled might increase the number of undiagnosed lesions.

Implications for general practice

- The majority of care for NMSC occurs in general practice
- GPs are efficient and effective in their use of biopsy and excision for the management of NMSC.

Conflict of interest: none declared.

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