

# Skin biopsies of pigmented skin lesions performed by general practitioners and hospital specialists

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**SUMMARY.** *The performance of skin biopsies by general practitioners has been examined in several recent studies. The aim of this study was to examine the difference between skin biopsies of pigmented skin lesions taken by general practitioners and those taken by hospital specialists. Reviewing all histopathology records at one hospital over a five year period revealed that there were 1000 patients who had had skin biopsies. General practitioners had carried out skin biopsies for 55% of these patients. Hospital specialists excised significantly more lesions that had increased in size ( $P<0.001$ ) or changed in colour ( $P<0.001$ ). General practitioners excised more lesions that had bled ( $P<0.001$ ). Hospital specialists excised more of the 15 melanomas diagnosed (80%) ( $P<0.05$ ), and general practitioners excised more squamous papillomas ( $P<0.01$ ). Forty per cent of melanomas excised were not suspected by the clinician. General practitioners were able to detect the majority of suspicious lesions, but because of the uncertainty of clinical diagnosis, all specimens should be submitted for histopathological diagnosis. It is important that future general practitioners are trained in both the diagnostic and technical aspects of skin biopsy if they intend to perform this minor operation.*

**Keywords:** *biopsy; melanoma; minor surgery.*

## Introduction

THE performance of skin biopsies by general practitioners has been examined in several recent studies.<sup>1-4</sup> In all of the studies, the number of pathological specimens received from general practitioners had increased since the introduction of the new contract for general practitioners. All the studies concluded that if general practitioners were to excise pigmented skin lesions, they would need to be adequately trained, and all specimens would need to be sent for histopathological examination. The studies did not examine all skin biopsy specimens received for histopathological examination from all sources. The specimens submitted by general practitioners were compared with those taken by hospital surgeons<sup>1</sup> or at a surgical day theatre,<sup>3</sup> or there were no comparisons.<sup>2,4</sup> From these studies it is not possible to estimate the difference between the population on whom general practitioners perform skin biopsy and the population who are referred to hospital for skin biopsy.

Excision of pigmented skin lesions by general practitioners rather than by hospital specialists has theoretical advantages for the patient including reduced waiting times, reduced travelling distances and convenient appointment times. However, it is to be questioned whether non-specialists should excise potentially malignant lesions, in view of the potential inaccuracies of clinical diagnosis.<sup>5,6</sup>

The aim of this study was to examine the differences between the skin biopsies of pigmented skin lesions taken by general

practitioners and those taken by all hospital specialists, by reviewing all histopathology records over a five year period. The following specific questions were examined: What proportion of all skin biopsies were performed by general practitioners? Is there an age or sex difference between patients from whom skin biopsies are taken by general practitioners and hospital specialists? Is there a variation in proportion of biopsies taken by general practitioners and specialists, dependent on the site of the lesion and potential cosmetic effects? Is there a variation between biopsies taken by general practitioners and specialists with regard to clinical features or histological diagnosis? Answering these questions would demonstrate current practice and help to identify whether it is appropriate for general practitioners to perform skin biopsy for pigmented skin lesions.

## Method

The pathology department at the British military hospital, Rinteln, receives all specimens for histopathological examination from the British military population in the first and fourth armoured division areas in Germany. This was approximately 46000 people at the time of the study, predominantly young adults and their families. Specimens may be submitted either by general practitioners or by hospital specialists at British military hospitals in Rinteln or Hanover. Patients have to be referred to a specialist by a general practitioner.

The histopathology reports for all skin biopsy specimens from pigmented skin lesions for the period 1 June 1986 to 31 May 1991 were reviewed. Only records with a comment in the clinical summary or in the description of the macroscopic appearance mentioning colour or pigment were included. For each report the source of referral, the age and sex of the patient, the site of the lesion, the clinical information supplied and the diagnosis were recorded retrospectively. A comparison of these factors was made between those biopsies taken by general practitioners and those taken by hospital specialists. Where applicable the difference between the two groups was assessed using confidence interval analysis<sup>7,8</sup> and the z test to compare proportions.

## Results

A total of 1000 patients had 1205 skin biopsies over the study period. While the number of patients having skin biopsies in 1986 was comparatively low, the total number of patients who had biopsies submitted for histopathological examination was approximately constant between 1987 and 1990 (Table 1). General practitioners submitted the majority of specimens and their

**Table 1.** Patients having skin biopsies, by year and source.

| Year* | No. of patients having skin biopsy (% of total for that year) taken by: |                      |
|-------|---|----------------------|
|       | General practitioners   | Hospital specialists |
| 1986  | 62 (49.6)   | 63 (50.4)            |
| 1987  | 110 (53.1)  | 97 (46.9)            |
| 1988  | 144 (54.8)  | 119 (45.2)           |
| 1989  | 117 (55.7)  | 93 (44.3)            |
| 1990  | 113 (57.9)  | 82 (42.1)            |
| Total | 546 (54.6)  | 454 (45.4)           |

\* Year of study from 1 June to 31 May.

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proportion of the total each year consistently increased. Of the specimens of 454 patients submitted to the pathology department by hospital specialists, 175 were taken by specialists in dermatology, 268 from general surgery and 11 from other specialists, including plastic surgery, gynaecology, ophthalmology and ear, nose and throat specialists.

There was no significant difference in the age or sex of the patients or the sites of excision between skin biopsies submitted by general practitioners and those submitted by hospital specialists (Tables 2 and 3). Almost two thirds of all patients having a skin biopsy were female (Table 2). The greatest percentage of patients having skin biopsies was in the 20 to 29 years age group (48.6% of the total). Among the 592 skin biopsies taken by general practitioners the greatest percentage (28.5%) were biopsies of the back while among biopsies taken by hospital specialists the greatest percentage (28.2%) were of the head or neck (Table 3).

**Table 2.** Sex and age of patients having skin biopsies taken by general practitioners and hospital specialists.

|                    | % of patients having skin biopsy taken by: |                                   |
|--------------------|--|-----------------------------------|
|                    | General practitioners<br>(n = 546)         | Hospital specialists<br>(n = 454) |
| <b>Sex</b>         |  |                                   |
| Male               | 37.7                                       | 33.5                              |
| Female             | 61.7                                       | 66.5                              |
| No record          | 0.5  | 0                                 |
| <b>Age (years)</b> |  |                                   |
| <10                | 1.3  | 4.2                               |
| 10-19              | 13.2                                       | 11.7                              |
| 20-29              | 49.1                                       | 48.0                              |
| 30-39              | 21.2                                       | 22.9                              |
| 40+                | 9.7  | 9.5                               |
| No record          | 5.5  | 3.7                               |

n = number of patients in group.

There was space on the pathology request form for the clinician to indicate why he/she thought the biopsy was required. Few forms gave two sets of clinical features if two biopsies had been taken. Therefore data are given for the biopsies of 1000 patients. There were three clinical features of the skin biopsies about which there was a significantly different rate of reporting between general practitioners and hospital specialists (Table 4). General practitioners excised more lesions that had bled (difference 6.9%, 95% confidence interval (CI) 3.2 to 10.6%, z = 3.72, P<0.001); hospital specialists excised more lesions that had increased in size (difference 10.1%, 95% CI 5.1 to 15.1%, z = 3.96, P<0.001); and hospital specialists excised more lesions that had changed in colour (difference 6.9%, 95% CI 3.5 to 10.4%,

**Table 3.** Site of the 1095 skin biopsies taken by general practitioners and hospital specialists.

| Site             | % of skin biopsies taken by:       |                                   |
|------------------|------------------------------------|-----------------------------------|
|                  | General practitioners<br>(n = 592) | Hospital specialists<br>(n = 503) |
| Head or neck     | 24.5                               | 28.2                              |
| Chest or abdomen | 17.4                               | 23.3                              |
| Back             | 28.5                               | 21.5                              |
| Limbs            | 20.4                               | 19.9                              |
| No record        | 9.1                                | 7.2                               |

n = number of skin biopsies in group.

**Table 4.** Clinical features recorded on pathology request forms by general practitioners and hospital specialists.\*

| Clinical features | % of patients with feature recorded by: |                                   |
|-------------------|---|-----------------------------------|
|                   | General practitioners<br>(n = 546)      | Hospital specialists<br>(n = 454) |
| Size increase     | 15.0                                    | 25.1***                           |
| Bleeding          | 13.6                                    | 6.6***                            |
| Clinically benign | 9.7                                     | 10.8                              |
| Itching           | 9.3                                     | 8.1                               |
| Cosmetic excision | 5.9                                     | 5.1                               |
| Colour change     | 4.8                                     | 11.7***                           |
| Irritation        | 0.5                                     | 2.6                               |
| Irregular margin  | 0                                       | 0.9                               |

n = number of patients in group. \*More than one clinical feature could be listed for a patient. \*\*\* P<0.001.

z = 3.93, P<0.001). Overall, there was a low rate of reporting of clinical features.

The number of diagnoses per patient was 1.16 for patients whose skin biopsy was performed by a general practitioner and 1.26 for those performed by a specialist. Although there was a significant difference between the two groups for excision of intradermal melanocytic naevi (difference 7.3%, CI 1.7 to 13.0%, z = 2.56, P<0.05) and compound melanocytic naevi (difference 7.1%, 95% CI 1.9 to 12.3%, z = 2.68, P<0.05) there was no difference if these groups of benign naevi were combined (Table 5). There was a higher percentage of diagnoses of melanoma among biopsies taken by hospital specialists than by general practitioners (difference 1.6%, 95% CI 0.3 to 2.9%, z = 2.47, P<0.05). There was a higher percentage of diagnoses of squamous papilloma among biopsies by general practitioners (difference 1.7%, 95% CI 0.4 to 2.9%, z = 2.76, P<0.01).

The case notes of the 15 patients with malignant melanoma were examined. The numbers were too small to detect differences in age or sex compared with skin biopsy patients who did not have a diagnosis of melanoma. Seven of the patients with a malignant melanoma had had their skin biopsy performed by a dermatologist, five had had their skin biopsy performed by a general surgeon and three by a general practitioner. There was no record of a clinical suspicion of melanoma on the request form

**Table 5.** Pathological diagnoses made by histopathologists of skin biopsies taken by general practitioners and hospital specialists.

|                                | % of the diagnoses of the skin biopsies taken by: |                                   |
|--------------------------------|---|-----------------------------------|
|                                | General practitioners<br>(n = 635)                | Hospital specialists<br>(n = 570) |
| Intradermal melanocytic naevus | 51.0  | 43.7*                             |
| Compound melanocytic naevus    | 27.1  | 34.2*                             |
| Seborrhoeic keratosis          | 5.0   | 4.7                               |
| Dermatofibroma                 | 4.4   | 3.5                               |
| Squamous papilloma             | 2.0   | 0.4**                             |
| Blue naevus                    | 1.9   | 3.0                               |
| Capillary haemangioma          | 1.9   | 1.4                               |
| Junctional melanocytic naevus  | 0.9   | 1.1                               |
| Melanoma                       | 0.5   | 2.1*                              |
| Miscellaneous                  | 5.2   | 6.0                               |

n = total number of diagnoses in group. \*P<0.05; \*\*P<0.01.

accompanying the three specimens by a general practitioner, two specimens by a dermatologist and one from a general surgeon. The difference between the percentage of melanoma to non-melanoma skin biopsies for general practitioners and dermatologists was 3.5% (general practitioners 0.5%, dermatologists 4.0%: difference 3.5%, 95% CI 0.5 to 6.4%).

### Discussion

This study identified some differences between patients who had skin biopsies performed by a general practitioner and those who had skin biopsies performed by a hospital specialist. General practitioners were excising an increasing proportion of pigmented skin lesions sent for histological examination over the five year period. Assuming that patients seen by specialists had been referred by their general practitioner for excision of a lesion, general practitioners correctly referred 80% (12/15) of malignant melanomas diagnosed in this study.

From this study it is possible to identify some of the factors that cause general practitioners to refer a patient with a pigmented skin lesion rather than perform the excision themselves. The age and sex of the patient and the site of lesion did not appear to be factors. Hospital specialists referred more lesions that had increased in size or changed colour: these two factors are cardinal signs of malignancy. Hospital specialists excised the majority of malignant melanomas and therefore may correctly be referred cases in which there is suspicion of malignancy. General practitioners excise a greater proportion of lesions which have bled, though there was no differentiation in this study between traumatic bleeding as a cosmetic problem and spontaneous bleeding as a sign of malignancy.

This study looked at a military population which is younger than the average civilian general practice population. Therefore, the distribution of age and pathological diagnoses is likely to be different from practice in the National Health Service. This could also influence the range of pigmented skin lesions seen. However, because all specimens from the defined population were sent to the same laboratory for examination this provides a useful population in which to compare general practitioner and hospital specialist activity.

In army practice, general practitioners are not paid on an item of service basis and the provision of resources to perform minor surgery does not come from a general practitioner's budget. Therefore, the performance of minor surgery in general practice is dependent on clinical indications and the general practitioner's expertise and enthusiasm.

The problems associated with the clinical diagnosis of malignant melanoma are well reported.<sup>5,6</sup> In this study all three melanomas excised by general practitioners and three of those excised by hospital specialists (40% of the total) were not clinically suspected. This emphasizes the need for all biopsies of pigmented skin lesions to be submitted for histopathological examination and for an efficient administrative system to be in place to ensure these results are notified to the doctor and patient concerned.

Both general practitioners and hospital specialists may fail to record clinical information. Six per cent of specimens taken by the general practitioner and 4% of the specimens by the hospital specialist had no record of patient's age. The site of biopsy was omitted in 9% and 7% of cases, respectively. It is not possible to assess how much pertinent clinical information was not included on the request forms. One study suggested that 40% of clinical information provided is poor,<sup>1</sup> but this may be an overestimation as a proportion of specimens may be for cosmetic purposes, with no significant clinical signs to report. It remains important both for good clinical practice and also for audit that request forms are completed accurately.

The incidence of malignant melanoma is increasing.<sup>9</sup> Public awareness of malignant melanoma through medically sponsored campaigns is also increasing.<sup>10-12</sup> Both factors may increase the number of patients presenting to general practitioners with pigmented skin lesions. This study shows that general practitioners are able to detect suspicious lesions with a high degree of accuracy. If provided with appropriate resources they may also perform the majority of skin biopsies. Indeed, general practice has been seen to be a cost effective setting for many types of minor surgery<sup>13</sup> and this is encouraged in the 1990 contract for general practitioners. It is therefore important that general practitioners are trained in both the diagnostic and technical aspects of skin biopsy and that all specimens are submitted for histological examination.

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