

## ORIGINAL ARTICLES

### An Audit of the Management of Melanoma Patients at Glasgow Royal Infirmary 1998-2003

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#### Abstract

##### Background

Melanoma is an important cause of morbidity and mortality. Recently published Scottish Intercollegiate Guideline Network (SIGN) guidelines outline standard management for melanoma patients in Scotland.

##### Methods

We audited the management of consecutive patients diagnosed with melanoma in Glasgow Royal Infirmary (1998-2003), using the SIGN guidelines as a gold standard.

##### Results

Of 102 patients, 41% were male and 59% were female. The mean ages of men and women were 58 and 50 years respectively. Fifty five per cent of all patients had a superficial spreading melanoma, and the median Breslow thickness was 0.64 mm. The most commonly affected site was the head and neck (29%).

Most patients (87%) were referred by their general practitioner, but only 30% were marked as urgent by the referrer, and accordingly the median time to first appointment varied between 20 days (1998) and 52 days (2001). The most frequently noted suspicious feature was irregular pigmentation. The median time to biopsy was 6 days. Seventy-one per cent of patients had an excision biopsy, and of those who did not, most (71%) had lesions on the head and neck.

There was poor recording of surgical margins (13%) and histological margins were used to determine the need for re-excision. The SIGN guidelines for re-excision and sentinel lymph node biopsy were closely followed.

##### Conclusion

The SIGN guidelines for melanoma have been adhered to in our department, although time to first appointment exceeded national recommendations.

##### Keywords

Melanoma, audit, SIGN guidelines

#### Background

Melanoma is an important cause of morbidity and mortality in the United Kingdom. Incidence has been increasing over the past few decades, with over 600 cases of invasive disease diagnosed in Scotland every year.<sup>1</sup> Breslow thickness at presentation is still the most important prognostic factor.<sup>3</sup> Early presentation and management may be associated with an improved outcome, so appropriate management of melanoma patients is an important aspect of dermatological practice.

The British Association of Dermatologists (BAD) published guidelines for the management of melanoma in 2002, reflecting best published data available at that time.<sup>4</sup> The SIGN guidelines (Scottish Intercollegiate Guideline Network) has recently published similar guidelines (2003<sup>1</sup>) which have been used in our department for the management of melanoma patients. The Department of Health in England and Wales has recommended that all suspected skin cancer patients (excluding basal cell carcinoma) should be seen within 2 weeks of receipt of a referral letter.<sup>2</sup> This target is unlikely to be extended to Scotland, although clinicians may be expected to perform primary treatment for skin cancers (excluding basal cell carcinoma) within 62 days of referral.

In view of recent publication of these guidelines we sought to assess the standard of clinical care in our department. There have been no recent data on the management of melanoma within UK dermatology departments and thus, we sought to delineate the demographic data of melanoma patients in our department and to compare clinical standards with those outlined in SIGN guidelines.

#### Methods

One hundred and two consecutive patients attending our department with cutaneous melanoma between 1998 and 2003 were included. Patients were identified by clinical and pathology records. Casenotes for each patient were examined and basic demographic data recorded. Risk factors recorded in the casenotes namely, family history of melanoma, skin type, time spent living abroad (for more than one year), and previous melanoma or other skin cancer, were documented. The source of referral was recorded, along with vetting category stated by the referrer; time for the letter to reach our department, time from vetting to first clinic appointment and cumulative time from the date on the referral letter to first appointment. Patients who failed to attend the department had the date of the planned clinic visit recorded. We also documented the site of the lesion, the suspicious features noted either from the history or the examination of the lesion; the time from clinic appointment to

biopsy and the time to follow up. Type of melanoma, Breslow depth and Clark level were noted for each patient. The type of excision and both surgical and histological margins were recorded. The need for re-excision and whether this was carried out by our department or another was documented, as was sentinel lymph node biopsy rate, initial follow up frequency, recording of scar check, full body survey and node check. Finally, any related adverse outcome was recorded.

## Results

Of 102 patients, 60 were female and 42 were male. The mean age (SD, standard deviation) for the entire population was 53 (18) years. The mean ages of males and females respectively were 58 (17) and 50 (18) years ( $p=0.0147$ ). Only 14 of our 102 patients had skin type documented, (9 patients with Type 1 skin, and 5 with Type 2 skin). Two patients had a possible family history of melanoma, but this was unconfirmed. One patient had a previous melanoma, 2 had a history of non-melanoma skin cancer, one had an outdoor occupation and 6 had lived abroad for more than a year.

89 of 102 patients were referred by their general practitioner, 6 were referred by another hospital speciality, 3 were already attending our department, and 2 were referred with diagnosis made. Of those already attending our department, one was a 37 year old female attending for mole surveillance who developed a melanoma-in-situ and the other two were elderly men (75 and 85 years old) with actinic damage and non-melanoma skin cancer, both diagnosed with lentigo maligna.

Of patients referred by general practitioners, only 31 patients (30 %) were vetted by GPs as urgent. Eleven (10.5%) were vetted soon, and 10 (10%) were vetted as routine. Almost one third of patients (30 %) were not vetted by the referrer. Nine per cent were referred for another reason and the lesion noted incidentally by the doctor or mentioned by the patient while at clinic. In four cases, the referral letter was missing. Of the general practitioner referrals, the mean age for urgent referrals was 51.225 years (SD 18.036) and for routine referrals was 56 years (SD 14.586).

In assessing time for a suspicious lesion to be seen at clinic we included only 83 patients (excluding those who had already been diagnosed, those who were referred for another reason and those with incomplete casenotes). The median time (interquartile range, IQR) from the referral being made (taken as the date on

the referral letter) to the clinic appointment was 40 days (23,58) for the time studied. This figure varied over the years studied (see Table I). Time for the letter to reach the department was considered a possible source of delay (median time 6 days (IQR 1,14)). Median time from consultant vetting to the first appointment for the entire period was 33.5 days (IQR 16,54).

The suspicious features of the lesion, where recorded in the casenotes, was documented. Both SIGN and BAD guidelines state 3 major and 4 minor clinical criteria that should arouse suspicion of melanoma. Of the major criteria, 38 patients had a change in size of lesion noted; 55 had irregular pigmentation noted; and 17 had irregular border noted. Of the minor criteria, 5 had inflammation recorded; 12 had itch/altered sensation noted; none had a lesion larger than others noted and 1 had oozing/crusting of lesion recorded. Other features recorded were bleeding (3 patients); a non-healing ulcer (2 patients); and clinical appearance of metastases (1 patient). Multiple features were common; 65 patients had 1 feature; 37 patients had 2 features; 9 patients had 3 features; and 1 patient had 4 features. Only 11 patients had no suspicious feature documented in the casesheet.

Time from first clinic appointment to biopsy date was recorded for those who had the diagnosis made in the department (96 patients). The mean time (SD) to biopsy was 11.19 days (21.1), and the median time (IQR) 6 days (0,14). 68 per cent of patients were biopsied within one week. 69 (71%) had excisional biopsy; 22 patients (23%) had incisional biopsy; and 6 patients (6%) had a punch biopsy. Of the non-excisional biopsies, 28% were for lentigo maligna or lentigo maligna melanoma and were largely performed on difficult sites (head and neck (71%); lower limb (14%)). Only 9 of 69 patients with an excisional biopsy had surgical margins recorded in the casenotes. Details of the histological report were not included in this audit, other than the recording of excision margins. 8 of the 69 patients had "complete excision" recorded on the pathology report, the remaining 61 patients had the margin stated in millimetres.

Of 102 patients, 56 had a superficial spreading melanoma; 6 had nodular melanoma; 8 had lentigo maligna melanoma; and 4 had acral melanoma. 12 patients had melanoma-in-situ; 10 had lentigo maligna; 3 had other types (naevoid melanoma; spindle cell melanoma; and severely dysplastic naevus considered to be a form of melanoma) and 1 had metastases. There was no statistically significant relationship between the type of melanoma and the GP vetting category or type of melanoma and the waiting time for a clinic appointment. There was however, a significant relationship between the type of melanoma and age and type of melanoma and gender (see Tables II and III). Sites of melanomas were recorded (see Table IV). The median (IQR) Breslow thickness was 0.64mm (0.2,1.7). There was a statistically significant relationship between age and Breslow thickness ( $p=0.009$ ), but not between the number of diagnostic features and Breslow thickness ( $p=0.484$ ) or male gender and Breslow thickness ( $p=0.4$ ).

**Table I: Median time (days) from letter reaching department to first clinic appointment**

Year	Median time (days)
1998	18
1999	31
2000	51
2001	52
2002	33
2003	27

**Table II: Type of melanoma by gender**

Type of melanoma	Females ( as %)	Males ( as %)
Superficial spreading	56.9	54.76
Nodular	6.9	4.76
Lentigo maligna melanoma	5.47	11.9
Acral	3.45	4.76
Melanoma-in-situ	15.52	7.14
Lentigo maligna	8.62	11.9
Other	3.45	2.38
Metastases	0	2.38

**Table III: Type of melanoma by age**

Type of melanoma	Age (years)	Standard deviation
Superficial spreading	49.96	17.67
Nodular	57.5	17.2
Lentigo maligna melanoma	62.125	13.65
Acral	55.75	19.36
Melanoma-in-situ	46.75	19.16
Lentigo Maligna	70.4	12.34
Other	47	26.21
Metastases	58	0

SIGN guidelines recommend a primary excision with 2 mm margin for a lesion, and re-excision thereafter with margins depending on Breslow thickness. 48 patients had Breslow depth less than 1mm. All of these patients had histological margins of less than 1 cm, and 81% of these patients had re-excision performed. For those with histological margins of 7 mm or less, 83% had re-excision performed; for those with histological margins of 5 mm or less 85% had re-excision performed and for those with histological margins of 3 mm or less 94% had re-excision performed.

12 patients had Breslow depth 1 to 2 mm. 11 of these had re-excision performed; the remaining patient had a histological margin of 19 mm. 16 patients had Breslow depth 2 to 4 mm. All of these patients had either wide primary excision or re-excision performed. Of re-excisions, 52% were undertaken by dermatologists and 48% were undertaken by surgeons. Whilst BAD guidelines recommend screening investigations for patients with Stage IIB disease or greater, SIGN guidelines suggest these have little role for an asymptomatic patient. Thus, screening investigations were not included in this audit.

BAD guidelines suggest sentinel lymph node biopsies (SLNB) should be performed only as part of a clinical trial, but SIGN guidelines recommend the procedure for all patients with a Breslow depth of greater than 1 mm or Clark level 4 or above. 37 patients had a Breslow depth of greater than 1mm, and 23 of these had SLNB. Of those who did not have the procedure, 1 patient refused, 1 was considered too frail, and 5 patients were diagnosed between 1998 and 1999, prior to publication of guidelines and prior to the accepted usage of this investigation. All others, except 1, were referred to plastic surgery for the procedure.

On the basis of Breslow depth less than 1mm and Clark level 4 or greater, 2 further patients qualified for SLNB. However of these, only one patient was referred to plastic surgery for consideration of SLNB and the procedure subsequently not performed.

Of 102 patients, 63 were followed up by dermatology alone, 21 as shared care between plastic surgery and dermatology, 7 patients by plastic surgery only, 5 by other departments (including specialist dermatology unit with an interest in melanoma), and 4 have defaulted from follow-up. Of the 84 patients attending our department for regular follow-up, 99% had a scar check recorded, 97% had node check recorded and 99% had skin survey recorded.

Outcome data are available for 99 patients. Seven patients (7%) developed nodal or metastatic disease (median time from diagnosis 17 months). These patients had poor prognostic indicators at outset (1 presented with metastases; 4 patients had a Breslow depth of greater than 5mm; 1 patient had a Breslow depth of 3.2mm; and 1 had a Breslow depth of 1mm but refused re-excision). 2 patients had melanoma-in-situ diagnosed during follow-up of a good prognosis melanoma (Breslow < 1.5mm).

## Discussion

Our patient group reflects the gender bias previously described, with a female:male ratio of 1.428.<sup>1</sup> The mean age of patients was 53 years (58 and 50 years for males and females respectively).

Most patients had a superficial spreading melanoma and the most common sites for all lesions were head and neck and trunk. The median Breslow thickness of the entire group was 0.65mm, which carries a good prognosis and this is reflected in the low numbers of patients developing nodal or metastatic disease.

Most patients were referred by their general practitioners. Only 30% were marked as urgent by the referrer and 30% were not vetted at all. Similar rates of non-urgent referrals for melanoma patients have previously been reported (44-50%).<sup>5,6</sup> The rate of incidental diagnosis in this group was high (8%), although higher rates have been reported previously (25%).<sup>5</sup> Frequent incidental diagnoses reflect well on the department but highlight missed opportunities for diagnosis elsewhere. A significant rate of missed diagnoses by medical professionals has previously been reported (12% of melanomas in a group of patients, in which the lesion had been in view of a doctor and the diagnosis not made).<sup>5</sup> Increased awareness of melanoma by other health professionals may optimize early diagnosis. A high rate of

**Table IV: Sites of affected lesions**

Site of lesion	Number of patients affected
Head and neck	30
Lower limb	29
Trunk	24
Upper limb	17
Genital area	2

incidental diagnoses suggests benefit in dermatologists screening for melanoma in patients attending clinic, however this would be time-consuming and impractical. Interestingly only 1 of 102 melanomas were diagnosed in patients attending for mole surveillance, which forms a significant proportion of the workload of a pigmented lesion clinic and is time consuming. Previous studies have shown that the probability of detecting a melanoma in patients attending for mole surveillance is low unless there is doubt about a specific lesion or unless there are additional risk factors for melanoma.<sup>7</sup>

The waiting time for melanoma patients to be seen in our department exceeds 2 weeks but varied considerably on a year to year basis, reflecting staff shortages within the department. Waiting times are an important political issue, in a climate of targets and increased pressure on our services generally. Inappropriate vetting by referrers is a contributory factor to prolonged waiting times. If cases of melanoma are not recognized by general practitioners as urgent referrals, this seriously undermines the basis of the 2 week rule for skin cancer. Indeed a high proportion of referrals as suspected skin cancer by general practitioners are benign<sup>6</sup> and our data shows that a significant number of melanomas are not referred as suspected skin cancer. Possible solutions to this problem would be to either improve general practitioner education in dermatology, or to re-organise the prioritisation system, for example by use of photographs with referrals or electronic letters with digital images. Teledermatology has already had promising results in prioritizing lesions, with a concordance between face-to-face diagnosis and telediagnosis ranging between 76.7% to 95.3%: accuracy of the diagnosis depending not on the quality of the image but upon the diagnostic difficulty of a lesion and the level of experience of observers.<sup>8</sup> Faxed referrals would also speed up the process, as we have shown the mean time for a referral letter to reach our department to be 6 days. Although special pigmented lesion clinics (PLC) have been widely introduced, previous data have shown that Breslow depth of patients attending a PLC is significantly less than those referred by other means,<sup>9</sup> which again highlights that the referrer must recognise the possibility of melanoma prior to making the referral, and that the diagnosis of melanoma is frequently not made by the referrer.

Within our study, there was a statistically significant relationship between age and Breslow thickness ( $p=0.009$ ), but not between the number of diagnostic features and Breslow thickness ( $p=0.484$ ) or Breslow thickness and male gender ( $p=0.4$ ). A relationship between Breslow depth and age has previously been reported,<sup>9-11</sup> but our study failed to replicate the relationship between Breslow depth and male gender which has been described.<sup>9,12,13</sup> A relationship between Breslow depth and each of the features on the 7 point checklist has been described.<sup>9</sup> We assessed correlation between number of clinical features and Breslow thickness and found no significant relationship.

Most patients were biopsied within a week of their first clinic visit, suggesting a high level of clinical suspicion, and most

patients had an excision biopsy performed. Excision margins were poorly recorded and so re-excision rates have largely been based on histological margins. Most re-excisions were performed within our department and most patients were appropriately referred for SLNB. The majority of patients were followed up by our department alone and there was good documentation of a full skin survey, examination for lymphadenopathy and a scar check, which is important as most relapses have been shown to occur within the first 3 years of diagnosis and most are local or nodal.<sup>14</sup>

We conclude that SIGN guidelines have been closely adhered to in our department. The main shortfall is a delay in time to first clinic appointment. We have also shown that referrer vetting for suspected melanoma is not reliable, and this has important implications for the planning of future services.

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