High-risk patients self-select for melanoma screening.

Amanda Oakley and Marius Rademaker

Dermatology Department, Waikato Hospital, Hamilton, New Zealand

Abstract. Guidelines for the Management of Melanoma in Australia and New Zealand published in 2008[1] describe population risk factors for melanoma. Screening those at high risk of melanoma may result in earlier diagnosis of melanoma in these subjects.

We evaluated risk factors in people attending a self-referred whole-body photography and sequential digital dermoscopy imaging service in New Zealand by examining data collected by MoleMap NZ during a 3-year period.

There were 27,090 patients, mostly of European ethnicity (97.1%). Compared to those diagnosed with melanoma, the mole mapping population tended to be younger and more likely to be female (60%). Risks for melanoma included history of melanoma (10%), actinic damage (27%), >50 common naevi (13%), >5 atypical naevi (16%), family history of melanoma in first-degree relative (15%), light-coloured hair (33%), blue eyes (45%) and a history of sunburn (90%). The risk factors were more pronounced in a subgroup of 94 patients diagnosed with melanoma.

The majority of screened patients had one or more significant risk factors for melanoma (95%). However, the impact of early diagnosis by mole mapping on the incidence and mortality of melanoma in New Zealand remains unknown.

Introduction

New Zealand has one of the highest incidence rates of invasive melanoma in the world. As survival from melanoma is strongly associated with depth of invasion, early detection of melanoma may reduce mortality and morbidity. This maybe achieved by effective skin screening. Skin screening often refers to a visual examination of the whole body; however, it may also be undertaken using whole body photography and digital dermoscopy.

A private teledermatology service established in New Zealand in 1997, provides skin screening by mole mapping, i.e., whole body photography and digital images of macro and dermoscopy views of lesions of concern. The images are stored on a secure server. An experienced dermatologist reviews the images, and may make recommendations for management of specific lesions.

Accepted risk factors for melanoma include (Australian/NZ Melanoma Guidelines, 2008):

- person's age and sex
- history of previous melanoma or non-melanoma skin cancer
- number of naevi (common and atypical)
- family history of melanoma
- skin and hair pigmentation
- response to sun exposure
- evidence of actinic skin damage (Figure 1)

Skin screening for melanoma is of greater benefit in people with more risk factors, as they are more likely to be correctly diagnosed with the disease than people with lower risk.

Material and Methods

The database of a proprietary whole body photography and sequential digital dermoscopy screening systems for melanoma (MoleMap NZ, Unit L/383 Khyber Pass Road, Newmarket, Auckland, New Zealand), was queried for melanoma risk factor data of patients attending during the period 2005-2008.

In addition, a randomly selected subgroup of 94 patients with 100 histologically proven melanomas diagnosed by mole mapping was also analysed.

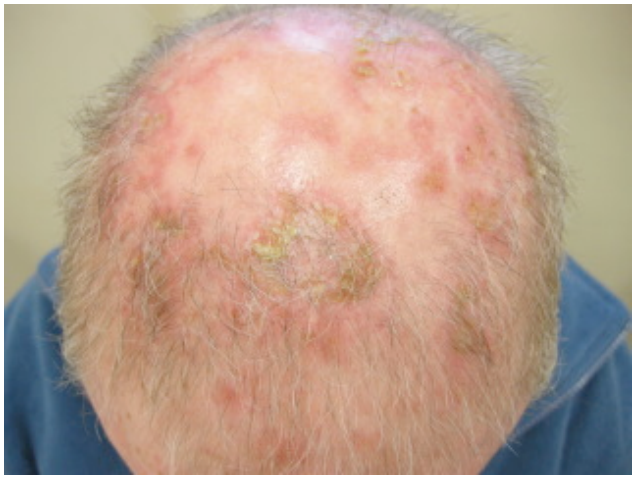

Figure 1. Moderate sun damage affecting the scalp.

Results

During the 3-year study period, 27,090 unique patients attended for mole mapping. It was the first visit for 6,152 (22.7%). The majority of patients (approx 70%) were self-enrolled; others attended on referral by their General Practitioner or other health professional.

There were 16,163 females (59.7%) and 10,927 males (40.3%). Overall, the average age was 41.2 years for females and 41.5 years for males. There were 808 patients over the age of 70 (2.1%) in the study population. Self-reported ethnicity was predominantly European (97.1%).

	Whole population		Melanoma subgroup	
Melanoma				
Not significant	23,879	89.0%	44	47.8%
Unsure	438	1.6%		
>5 years ago	983	3.7%	12	13.1%
Recent or multiple	1,516	5.7%	36	39.1%
Total	26,816	100.0%	92	100.0%
Actinic damage				
Not significant	10,848	41.1%	21	22.8%
Some	8,375	31.7%	36	39.1%
Moderate	5,549	21.0%	23	25.0%
Severe	1,625	6.2%	12	13.1%
Total	26,397	100.0%	92	100.0%

Table 1. History of melanoma or non-melanoma skin cancer.

A self reported history of prior melanoma was given by 2,499 individuals (9.4%), and was recent (<5 years) in 5.7%. Moderate to severe actinic damage i.e., a history of non-melanoma skin cancer or actinic keratosis, was self reported in 27.2% (Table 1). Other data are summarised in Tables 2 - 4.

	Whole population		Melanoma subgroup	
Number of moles				
Not significant	16,089	64.6%	42	47.2%
Some (>5) moles >5mm	5,516	22.1%	20	22.5%
Many (>50) moles >2mm	3,309	13.3%	27	30.3%
Total	24,914	100.0%	89	100.0%
Atypical naevi				
Not significant	15,131	60.0%	25	29.8%
Few (0 - 5)	6,061	24.0%	34	40.5%
Some (5 - 15)	2,557	10.1%	15	17.8%
Many (>15)	1,482	5.9%	10	11.9%
Total	25,231	100.0%	84	100.0%

Table 2. Number of melanocytic naevi.

	Whole population		Melanoma subgroup	
Hair Colour				
Red	1,106	4.2%	5	5.6%
Blond	4,726	17.8%	11	12.2%
Light	3,043	11.4%	10	11.1%
Brown	15,496	58.2%	62	68.9%
Dark	1,099	4.1%	1	1.1%
Black	1,134	4.3%	1	1.1%
Total	26,604	100.0%	90	100.0%
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Blond	4,726	17.8%	11	12.2%
Light	3,043	11.4%	10	11.1%
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Dark	1,099	4.1%	1	1.1%
Black	1,134	4.3%	1	1.1%
Total	26,604	100.0%	90	100.0%

Table 3. Hair colour and skin pigmentation.

	Whole population		Melanoma subgroup	
Fitzpatrick phototype				
Skin Type = 1	2,147	8.0%	7	7.7%
Skin Type = 2	14,560	54.1%	62	68.9%
Skin Type = 3	9,837	36.5%	22	24.4%
Skin Type = 4	356	1.3%	0	0
Skin Type = 5	29	0.1%	0	0
Total	26,929	100.0%	91	100.0%
History of sunburn				
Not significant	2,762	10.4%	3	3.2%
Some early	11,859	44.5%	37	39.4%
Many early	10,526	39.5%	4	4.3%
Some late	1,514	5.7%	50	53.2%
Total	26,661	100.0%	94	100.0%
Sun bed use				
Not significant	21,230	79.9%	79	85.9%
Occasional use	4,708	17.7%	10	10.9%
Frequent use	633	2.4%	3	3.3%
Total	26,571	100.0%	92	100%

Table 4. Response to sunburn.

The relative risks of the study population were compared with the relative risks described in the Melanoma Guidelines. Ninety-five percent of the screened population was assessed as having at least 1 risk factor; 71% had at least 2 risk factors and 32% had at least 3 risk factors.

The melanoma subgroup included 51 males and 43 females. There were 6 patients over the age of 70 in the melanoma subgroup (6.3%). Self-reported ethnicity was European in all cases (100%). A definite history of prior melanoma was given in 53.9% of 89 patients and was recent (<5 years) or multiple in 40.4%. Moderate to severe actinic damage was reported in 41.6% of 89 patients (Table 1). 30.3% of patients had more than 50 moles that were >2mm in diameter and 29.8% had more than 5 clinically atypical naevi (Table 2). A first-degree relative with melanoma was reported by 26.6%.

All of the melanoma subgroup was assessed as having at least 1 risk factor; 98.9% had at least 2 risk factors and 91.1% had at least 3 risk factors

Discussion

Several professional groups including the Cancer Society of New Zealand (2007) do not endorse routine skin screening for average risk individuals (US Preventive Services Task Force, 2001). The Early Detection Advisory group (EDAG 2006) stated that there is no high quality evidence from randomised controlled trials that screening for melanoma is effective in reducing mortality. In addition, it is not possible to conclude whether or not screening for skin cancer does more good than harm (possible harms including unnecessary biopsies and treatment). EDAG also commented *"There is broad agreement that individuals at high risk should be identified and offered surveillance"*.

Conclusion

This study confirms that many of those attending for mole mapping are individuals at high risk of melanoma.

References

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