Improved Malignant Melanoma Prognosis at a Consultant-Delivered Multidisciplinary Pigmented Lesion Clinic in Cork

S Field 1, S Doody 2, J Fitzgerald 1, M Murphy 3, H Comber 2
1Dermatology Department, South Infirmary Victoria University Hospital, Old Blackrock Road, Cork 2Department of Histopathology, Mercy University Hospital, Granville Place, Cork 3National Cancer Registry, Cork

Abstract
Early detection and excision is the only effective treatment for malignant melanoma. To assess the effect of a consultant-delivered, rapid-access pigmented lesion clinic (PLC) established at the South Infirmary-Victoria University Hospital (SIVUH), we analysed melanoma tumour stage prior to (1998-2002) and after (2003-2007) the advent of the PLC. Patients attending SIVUH had a greater proportion of early stage tumours (65.3%) compared to the rest of Cork (51.3%). County Cork as a whole (56.7%) and all of Ireland (57.4%). The proportion of SIVUH males with early stage tumours was statistically significantly higher than the rest of County Cork (chi² = 11.23, P=0.05). The proportion of patients > 50y with early stage tumours was also statistically significantly higher than the rest of County Cork (chi²=18.89, P<0.05), the whole of County Cork (chi²=7.84, P=0.05) and all of Ireland (chi²=9.67, P=0.05). We believe that the early detection and improved prognosis of Cork melanoma patients is at least partly due to the PLC.

Introduction
Malignant melanoma is increasing worldwide, particularly in countries with skin type and climate akin to Ireland. It has long been established that Breslow thickness is the best indicator of prognosis. Thinner melanomas are associated with substantially higher 5 year survival rates (<1mm 90-95% 5 year survival) than thicker melanomas (>4mm 45-67% 5 year survival); so earlier detection and treatment should reduce mortality risk. Melanomas with complete T staging represented 62% of all tumours in Ireland and 88.5% in County Cork (98.4% in patients attending SIVUH and 87.9% in non-SIVUH patients). Patients diagnosed with melanoma were compared based on geographical location. For those patients diagnosed in Cork, we analyzed 2 groups - those diagnosed in SIVUH and those diagnosed elsewhere in Cork (non-SIVUH). Two time periods were compared corresponding to the five year periods before (1998-2002) and after (2003-2007) the PLC was established. Pairwise comparisons were carried out to examine the distribution of and proportions of sex, age groups and tumour stage between the two time periods and patient groups (SIVUH and non-SIVUH). Logistic regression analysis was also performed to assess the effect of sex and age distribution of patients on tumour stage at diagnosis.

Results
Overall there has been a large rise in the number of melanomas diagnosed comparing pre PLC and post PLC time periods in SIVUH, County Cork and nationally. In Ireland, 2304 melanomas were diagnosed between 1998-2002 while 3031 were diagnosed between 2003-2007, representing a 32% increase. In SIVUH 86 melanomas were diagnosed between 1998-2002 while 216 were diagnosed between 2003-2007, representing a 151% increase in the number of melanomas diagnosed in SIVUH. For the purpose of the analysis, tumours were grouped into "early" (T1, T2: Breslow 1.5mm) and "late" stage (T3, T4: Breslow 1.5mm) by means of the tumour ("T") stage alone. This is because while a large proportion of tumours have complete T staging information, fewer tumours have correspondingly information on nodal ("N") or metastatic ("M") status. The proportion of melanomas with complete T staging represented 82% of all melanomas in Ireland and 74% in County Cork (39.4% in patients attending SIVUH and 87.9% in non-SIVUH patients). Patients diagnosed with melanoma were compared based on geographical location. For those patients diagnosed in Cork, we analyzed 2 groups - those diagnosed in SIVUH and those diagnosed elsewhere in Cork (non-SIVUH). Two time periods were compared corresponding to the five year periods before (1998-2002) and after (2003-2007) the PLC was established. Pairwise comparisons were carried out to examine the distribution of and proportions of sex, age groups and tumour stage between the two time periods and patient groups (SIVUH and non-SIVUH). Logistic regression analysis was also performed to assess the effect of sex and age distribution of patients on tumour stage at diagnosis.

Discussion
To further explore if any changes in the sex and age distribution of the melanoma patients had an influence on the relationship between tumour stage and the time period of diagnosis, a series of logistic regression models were fitted to the data. The positive trend of greater proportions of early stage tumours in 2003-2007 was confirmed (Table 2). Adjusting for patient sex and age improved the fit of the model for SIVUH patients and for Ireland overall although this trend for the non-SIVUH patients did not seem to be affected by any changes in sex or age over time. However, when the model was adjusted for patient attendance at SIVUH a reduction in odds ratio was observed. Although not statistically significant this implies that the movement of patients to SIVUH is contributing to the overall shift towards earlier stage at diagnosis with time observed in the Cork population.

Pigmented lesion
A rise in the number of melanomas diagnosed over a 10 year period was observed together with a trend of increasing proportions of early stage tumours diagnosed in Cork residents and Ireland overall. There were greater proportions of early stage tumours diagnosed in SIVUH females and particularly in SIVUH males and patients over the age of 50 years compared to the non-SIVUH population, county overall and Ireland. In the fair skinned melanoma incidence is increasing. Studies in Scotland and Australia have shown an increase in melanomas in patients over 60 years. In Scotland this older age group also present with thicker melanomas and therefore have a poorer prognosis. Our SIVUH figures suggest that PLC is helping target males and particularly the older age group who frequently present late with thicker melanomas. The higher proportion of early stage tumours in patients diagnosed in Cork but particularly in the SIVUH combined with the movement of patients to SIVUH since establishment of the PLC suggests the establishment of the PLC is having a positive impact on the overall picture of tumour stage in Cork residents.

In the UK a number of dermatology units have looked at the effect of their PLCs but have not shown a reduction in Breslow thickness. Weatherhead et al did a retrospective analysis of their melanoma screening clinic (1997 to end of 2004). As a result of their PLC the number of new patients seen each year increased by 23%. The proportion of melanomas detected declined. Their experience suggests the PLC resulted in increased number of referrals from GPs but did not reduce Breslow thickness. Mallet et al showed no reduction of Breslow thickness over a 9 year period but suggested the PLC fulfilled a demand from both GPs and patients and allowed centralization of much rapped data collection. Other studies also failed to show reduction in Breslow thickness.

Lipaker et al in a French study showed that Breslow thickness has reduced in their Bas-Rhin region of France from 1980 to 1997. They found an increase in incidence of melanomas, this increase was mainly related to an increase in superficial spreading melanoma in both sexes. They noted that mortality during their study period did not increase proportionally to the increase of melanomas diagnosed suggesting clinically innocuous melanomas, unlikely to cause death were being picked up. Melanoma mortality rates are increasing by about 4% for men and black men and women and women are increasing by 4% since 1994. Osborne et al assessed the interval between referral and diagnosis and noted a reduction in the interval after the introduction of their PLC. They believe that PLCs are of value in the diagnosis and treatment of melanoma, but only if they are appropriately utilized by GPs. To help ensure appropriate utilization we attempt to write to local GPs each spring to remind them of the PLC.

We have shown in this study that over a 10 year period there has been a rise in the number of melanomas treated and a drop in the tumour stage at diagnosis in patients treated in Cork County and in patients treated in SIVUH. Our analysis indicates that these changes may be related to the introduction of a consultant delivered multidisciplinary pigmented lesion clinic at the South Infirmary-Victoria University Hospital. The finding of an earlier tumour stage in patients attending the SIVUH hopefully with time will result in a reduction in mortality from malignant melanoma in Cork County.

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Correspondence: S Field
Dermatology Department, South Infirmary-Victoria University Hospital, Old Blackrock Road, Cork
Tel: +353 21 4926330
Fax: +353 21 4926405
Email: sineadfield@hotmail.com

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