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Feature Articles

Report on Consensus Meeting of the EORTC Melanoma Group on Educational Needs for Primary and Secondary Prevention of Melanoma in Europe

Results of a Workshop held under the auspices of the EEC Europe Against Cancer Programme in Innsbruck, April 1991

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INTRODUCTION

In 1980 there were 7500 deaths annually from cutaneous malignant melanoma in Europe, 5000 of which were in member states of the European Community. It is estimated that in 1980 17 000 individuals in the European Community had a first diagnosis made of malignant melanoma, and that the number of new cases of malignant melanoma in 1990 will have increased by 60% to 27 000 [1].

Incidence and mortality rates of cutaneous melanoma are rising steadily. Internationally, the incidence of malignant melanoma varies 100–200-fold. Even within Europe the variation as reported at present is 10-fold for both incidence and mortality rates. Cutaneous melanoma is reported more commonly in northern than southern Europe, and in Scandinavia the lifetime risk of developing cutaneous melanoma is around 1%.

In all countries from which both incidence and mortality data are available, melanoma incidence is rising more steeply than melanoma mortality, and the rate of increase is the same in both sexes. The rate of increase varies between 3 and 7% per year [2] in European populations, and detailed studies of incidence trends over time indicate that this increase can be explained at least in part by very strong cohort effects, i.e. the risk of melanoma increases from generation to generation. More detailed site-specific analyses reveal that for all body sites except the head and neck, children have a 4–5 times higher risk of developing melanoma than their parents [3]. This striking generation effect is attributed to changing behaviour with regard to recreational exposure to sunlight.

While information on melanoma-related mortality is available for the majority of European countries, nationwide incidence rates for melanoma are only known with accuracy for a limited number of areas including Scandinavia and Scotland. Cancer registries vary in their completeness of registration of cutaneous malignancies including melanoma in many European countries. National cancer mortality statistics published by the World Health Organisation and morbidity data are available from *Cancer Incidence in Five Continents*, published jointly by the International Association of Cancer Registries and the International Agency for Research on Cancer [4]. Age-standardised mortality rates show that in Europe male mortality exceeds female although the incidence of melanoma is higher in females in a number of European countries, including Scandinavia and the UK. Age-standardised mortality rates in Europe for the years 1980–1984 varied between 0.4 and 3 per 100 000 per year for males and 0.3 and 1.9 per 100 000 per year for females. Melanoma-related mortality is 4–6 times higher, as currently reported in the Scandinavian countries, than it is in the Mediterranean European countries including Portugal and Greece. An additional important point here is that a high proportion of melanoma patients die at a relatively young age. An indicator of this premature mortality is a measure of years of potential life lost. For example, in Denmark for each death from melanoma, 14–15 years of potential life before the age of 65 are lost by both sexes. A similar figure has been reported from the USA [5]. Numbers of quality life-years lost may well reflect the impact of disease in terms of human cost more accurately than basic incidence and mortality data.

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Risk factors

All case-control studies to date strongly incriminate intermittent recreational sun exposure as a major risk factor in the aetiology of cutaneous malignant melanoma. Studies from Denmark [6], Scotland [7] and Germany [8] all identify exposure of non-acclimatised Caucasian skin as an important factor. Higher rates of melanoma are recorded on intermittently than on chronically exposed body sites and melanomas differ from non-melanoma skin cancers with regard to age, sex and body site distribution. In most studies an outdoor occupation is not associated with increased risk of melanoma, and some studies even report that this is protective, suggesting that year-round sun exposure is not a specific risk factor. Sun exposure during leisure time as a risk factor may also explain the positive socioeconomic gradient which is noted for melanoma in contrast to the negative gradient for non-melanoma skin cancer.

These findings give rise to what is currently known as the intermittent exposure hypothesis; intermittent exposure to intense ultraviolet radiation of skin which is normally protected is a particular risk factor for malignant melanoma. Phenotypic risk factors which have been identified for many years include a fair skin with fair or red hair and inability to develop a tan on sun exposure. However, more recent studies have identified as a very strong risk factor for melanoma the total number of banal small benign pigmented melanocytic naevi or moles. Total body counts of such naevi or numbers of palpable naevi on the upper arms are identified as the stongest risk factor for melanoma in appropriate case-control studies [6–8]. A freckling tendency is an additional strong risk factor independent of melanocytic naevi. A family history of melanoma is also a positive risk factor, although only 5–8% of all melanomas occur in a familial setting. The role of the so-called dysplastic naevus as a precursor to melanoma or an identifying mark of an individual at increased risk of developing melanoma on another body site is still debated, as are the clinical and pathological definitions of this entity.

Sun exposure in childhood is currently identified as a risk factor for later development of malignant melanoma. Studies of immigrants from Europe to sunnier countries including Australia [9, 10] show clearly a relation between age at arrival and melanoma risk. Thus the child who is born in the sunnier climate has a greater lifetime tisk of melanoma and indeed of other types of skin cancer than the child who arrives in that country from a cooler European climate at the age of 10. This emphasises the importance of education with regard to sun protection in infancy and childhood.

Hormonal and reproductive factors have been studied in great detail as possible risk factors in females. Results of studies to date do not incriminate hormonal factors including the oral contraceptive as a risk factor. Other putative risk factors investigated in case-control studies, with negative results, include dietary factors and alcohol. At present, although the intermittent exposure hypothesis does not satisfactorily explain all cases of cutaneous malignant melanoma, there is no non-solar factor identified as an additional or secondary risk factor [11].

EDUCATIONAL REQUIREMENTS FOR THE MEDICAL PROFESSION

Educational requirements for pathologists

The diagnosis of cutaneous malignant melanoma requires expert pathological assessment. In some European countries this will be by an anatomical pathologist, while in others such as Switzerland and Austria, this is more likely to be a dermatologist with additional pathological training. The responsible individual should be able to confidently differentiate cutaneous malignant melanoma from other proliferations of the melanocyte system and should report an assessment of pathological features of recognised prognostic significance, the most important of which are tumour thickness, Clark level of invasion, the presence or absence of ulceration, the presence of mitoses within the tumour and a quantitative assessment of these mitoses, the presence or absence of regression and the histogenetic type of tumour.

For the general pathologist to make a confident assessment of all the above, exposure in training to a reasonable volume of representative melanocytic lesions is essential. It is also important that pathologists and clinicians hold regular meetings to discuss difficult cases, at which the pathologist can obtain necessary feedback on diagnoses made. In smaller European departments the volume of work may be such that the number of melanomas seen annually is not adequate for the trainee to build up his experience or for the trained pathologist to maintain that experience. It is therefore important that individual countries within Europe have available a panel of expert pathologists who are willing and able to give a rapid opinion on problem cases. The availability of this panel should be widely known through the pathological societies and melanoma working groups in the individual countries, and the arrangements for referral of slides and for obtaining reports should be clearly publicised.

It is hoped that an examination organised under the auspices of the European Society of Pathologists in association with the proposed European School of Pathology in Turin will produce a diploma which can be taken by those wishing to expand their expertise in all aspects of pathology, including melanocytic pathology. This will be regarded as supplementary to national requirements for licensing for specialist practice and as a certificate of achievement which will facilitate the movement of pathologists between European countries [12].

The pathology subgroup of the EORTC Malignant Melanoma Cooperative Group has also played a part in efforts to improve and standardise pathological reporting of melanoma in Europe. In 1980 this group published the results of a reproducibility study of assessment of tumour thickness and Clark level of invasion in a series of melanoma slides carried out amongst several European pathologists [13]. The results of this study showed that individual assessments varied greatly prior to any discussion, but after consensus meetings and further assessment, significant improvement in agreement was reached. The study clearly indicates the value of meetings with precirculated slides in improving the standard of pathology in the member states.

Educational requirements for surgeons

All of those involved in biopsy and definitive treatment of malignant melanoma should be aware of current views with regard to biopsy of malignant melanoma, and also current views on excision margins considered adequate for primary cutaneous melanoma. In general, excision rather than incisional biopsy of cutaneous malignant melanoma is to be preferred. This will give the pathologist the best specimen for assessing excision margins and tumour thickness. At present, in Europe an increasing number of melanomas are diagnosed when they are relatively small, and in cases of clinical doubt an excisional biopsy with a margin of 2–5 mm of normal skin surrounding is the preferred approach. When the diagnosis of melanoma has been confirmed, and when the pathologist has measured the thickness of the excised specimen, a decision can be made on the need for further excision of the area in question. The excision margins currently recommended for cutaneous malignant melanoma have been

assessed as the result of a number of large studies including that conducted by the WHO [14]. For melanomas 1 mm or less in thickness, 1 cm of normal tissue in all directions including deep to the tumour is recommended. For melanomas 1–2 mm, an excision margin of 2 cm is common practice, and for melanomas thicker than 2 mm, a margin of 3 cm. All fatty tissue superficial to the muscle or muscle fascia should be included in the specimen. This excision margin is frequently being reduced to 2 cm on the face and neck, and to 1 cm on the nose and eyelids, irrespective of tumour thickness. There is no evidence to suggest that excision margins wider than 3 cm for very thick tumours are of benefit for local disease control. These excision margins are narrower than those recommended historically, and it is now therefore possible for many melanoma excisions to be closed directly or with flaps without the need for skin grafts. It is, however, essential that all those involved in surgery for small primary melanomas, including possibly dermatologists and even family doctors, are aware of the vital importance of including an adequate depth of excision in their definitive specimen.

All those involved in obtaining the pathological confirmation of a suspected diagnosis of malignant melanoma should be aware of a local surgeon or local cancer centre at which there is a specific research interest and expertise in malignant melanoma to which the patient could be referred for immediate treatment. Patients with locally recurrent melanoma after primary excision, or patients who develop nodal or distant metastases, should be referred to a specialist surgeon with recognised interest and expertise in malignant melanoma.

In some European countries, including The Netherlands, Germany, Switzerland and Scotland, the technique of isolated limb perfusion is available in a limited number of centres. This technique is of great value in palliating recurrent malignant melanoma confined to one limb. This adjuvant use of isolated arterial limb perfusion is not yet of proven value and the results of an EORTC/WHO combined trial are eagerly awaited.

Educational requirements for dermatologists

Skills required for care of the melanoma patient should be an integral part of trainee dermatologist experience and continuing education. However, at the present time the role of dermatologists in the management of the melanoma patient varies greatly between the European countries. In some countries care of the melanoma patient after the initial diagnosis is predominantly in the hands of the surgeons or oncologists, while in other countries the dermatologist is responsible for diagnosis, primary surgery, chemotherapy and palliative care. Accordingly, educational requirements for this specialty group will vary according to the practise in the country in question.

However, all dermatologists in Europe should be able to recognise *early* malignant melanoma, i.e. melanoma which is less than 1 mm in tumour thickness. In some European countries the technique of skin surface microscopy or epiluminescence is under investigation as an aid to clinical diagnosis. Results of these studies are awaited.

Dermatologists should be competent in carrying out excisional biopsies of smaller melanomas if indicated. They should be aware of the pathological features of prognostic importance, to enable them to discuss the pathological report with the reporting pathologist, and in some centres may have to carry out this function themselves. They should be aware of the pitfalls associated with diagnosing melanoma on frozen sections and should have access to a specialist melanoma pathologist if required.

There is not at present a standard follow-up regimen after primary surgery, but a common pattern is to examine the patient at 3-monthly intervals for the first 2 years, at 6-monthly intervals for the next 3 years, and annually thereafter. All patients must be aware of the need to contact their physician between these visits if they are concerned about disease recurrence.

Dermatologists should also be aware of the chemotherapeutic possibilities for patients with stage III disease.

In some centres the number of patients with melanoma will make the acquisition of these skills difficult. In many countries the specialist centres run pigmented lesion clinics at which relatively large numbers of melanoma patients are seen. It is recommended that all dermatological trainees are exposed to these pigmented lesion clinics.

Educational requirement for oncologists

In most European countries the clinical oncologist only plays a role in the management of the melanoma patient who has advanced disease. At present there is no single chemotherapeutic regimen of proven value for such patients, and therefore the oncologist with an interest in melanoma should be aware of the range of clinical trials organised by groups such as the EORTC Melanoma Group into which patients could be entered.

Educational requirements for paediatricians

Paediatricians will rarely be required to manage patients with malignant melanoma as the incidence of melanoma prior to puberty is very low indeed. However, paediatricians are in an ideal position to advise young mothers about the hazards of excessive sun exposure and should therefore be aware of the importance of restricting excessive sun exposure in infancy and early childhood. In addition, paediatricians and neonatologists will be responsible for the initial identification and referral for management of the rare child with the large or giant congenital melanocytic naevus. These lesion are defined as naevi which are too large to remove without the requirement of a skin graft, or as having a maximum diameter of over 20 cm. The incidence of smaller congenital naevi is relatively high at 1%. The giant congenital melanocytic naevus has a lifetime risk of malignant change of 4–6% [15]. Children born with the giant or garment type of congenital naevus should be referred within the first 48 hours to a local specialist centre. In some European countries the current procedure for the management of these giant naevi is shaving of the superficial epidermis and dermis within the first week of life, and therefore referral without delay is essential. In other European countries the approach is careful follow-up of these patients to detect possible malignant change. Paediatricians should be aware of the appropriate referral arrangements to general surgeons, surgical oncologists or plastic surgeons in their countries.

Educational requirement for primary care doctors

In countries in Europe in which medical services are organised around a primary care or family doctor system, this individual has an important part to play in the early recognition of melanoma and also in public education with the aim of melanoma prevention. All general practitioners and primary care doctors in the course of their vocational training should receive adequate dermatological training including training in the recognition and first-line management of cutaneous malignancies including cutaneous malignant melanoma. The trainee family doctor should receive education in the clinical differential diagnosis of all cutaneous pigmented lesions including benign and malignant

melanocytic lesions, and also non-melanocytic pigmented lesions which may give rise to diagnostic difficulty including seborrhoeic keratoses and dermatofibromas. The family doctor should be aware of the features of early malignant melanoma, and should know of the absolute requirement to obtain pathological confirmation of suspected malignant melanoma. In some countries the family doctor himself may be responsible for carrying out an excision biopsy to obtain the diagnosis and should therefore have adequate training in cutaneous surgery, and be aware of the appropriate narrow margins required for excision diagnostic biopsies. Family doctors should be aware of the prognostic significance to the patient of Breslow thickness measurements, and should also be aware of the local arrangements for further management of patients with thicker primary malignant melanomas. Family doctors should be aware, too, of the existence of families at greater than average risk of malignant melanoma, with large numbers of naevi and possibly multiple dysplastic naevi. They should be aware of the importance of ultraviolet exposure in the initiation of melanoma, and be prepared to advise patients appropriately on limiting sun exposure and on the use of appropriate sunscreens.

Educational requirements for medical students

All of the specialists itemised above will have had training as medical students. Education on the biology of the melanocyte system, its clinical abnormalities and the biological behaviour of malignant melanoma should begin at this stage. In the course of their pathological training medical students should be introduced to the pathology of cutaneous malignant melanoma and be given some idea of the features of recognised prognostic significance. Clinical exposure to malignant melanoma in medical student training will vary in European countries. In some countries medical students will be more likely to see patients with melanoma in dermatological clinics, in others in surgical or oncological clinics. Those involved in the training of medical students should coordinate education on skin tumours to ensure that if possible all medical students are exposed to patients with early cutaneous malignant melanoma prior to excision of the lesion so that they can begin to learn to recognise the clinical features. In addition, they should be exposed in a clinical setting to patients with a wise variety of benign non-melanoma cutaneous pigmented lesions to begin to learn the clinical differential diagnosis. Medical students should have an outline of the appropriate surgical management of primary melanoma, and should understand the appropriate follow-up arrangements for patients who have had excision of these lesions. They also should have some idea of the management of patients with nodal or disseminated cutaneous malignant melanoma. This last aspect is most likely to be taught in oncological departments, and once again coordination of the medical students' training to ensure that all aspects of this important area are covered is essential.

Educational requirement for nurses

Nurses who are working in both the hospital and community setting can play an important role in primary and secondary prevention of cutaneous malignant melanoma. Very often nurses have direct contact with patients for longer than doctors, and are therefore in an excellent position to offer advice on health education. They are also frequently individuals who observe the entire cutaneous surface of both patients and elderly members of the public in their own homes, and may draw the attention of the clinician to a suspect lesion. They are therefore very well situated to offer advice on prevention of melanoma and to recognise early cutaneous malignant melanoma by observation. For this reason, all nursing colleges should include in their teaching a module on cutaneous malignancies, paying particular attention to prevention and early detection of cutaneous malignant melanoma. It is important that this education on early cutaneous melanoma is offered to young nurses in general nursing training. In some countries, nurse education on malignant melanoma may be concentrated in specialist modules in oncology nursing. While this is obviously necessary, the more important and urgent task is educating the wider range of nurses to recognise early curable malignant melanoma.

Education of pharmacists

In many European countries community pharmacists are the first line of consultation for members of the public with what they perceive to be a minor medical problem.

Community pharmacists should therefore have education on the clinical features of early malignant melanoma and its likely differential diagnoses as part of their training. They should also be aware of the need for urgent referral and diagnostic biopsy.

In many community pharmacies in European countries a notice board or public display carries a wide range of health education messages. These can play an important role in any melanoma education campaign. Community pharmacists should play a part in designing posters for display in their pharmacies, and should also comment on the value of proposed leaflets which they will be in an excellent position to distribute.

Education on melanoma for body care professionals

Body care professionals, for the purpose of this report, are defined as individuals who during the exercise of their profession have an opportunity to observe the skin of a large part of the body. These individuals may include physiotherapists, chiropodists, hair dressers, beauticians, etc.

Leaflets, posters and pamphlets can be prepared for these groups, and once or twice yearly hospital meetings organised by those with a major commitment to melanoma, to which these groups of professionals are invited, possibly with an element of self-assessment quiz at the end of the educational exercise, are usually well received. Body care professionals working outside the hospital setting also require similar information. Once again, these individuals respond well to invitations to attend specific meetings to inform them about the importance of malignant melanoma. Many of these groups have professional bodies and organisations which are keen to disseminate this type of information to their members. Prior to any educational exercise in any European country, an effort should be made to make contact with these groups of body care professionals who, as with nurses, can be an extremely valuable screening resource. These body care professionals should, as with others, be aware of the absolute need to advise any member of the public with a possible early melanoma to seek medical advice and treatment as a matter of urgency.

Educational requirements of primary prevention campaigns

At the present time, the major identified aetiological factor in the induction of cutaneous malignant melanoma is excessive exposure of unacclimatised Caucasian skin to strong ultraviolet radiation. It therefore follows that primary prevention campaigns require to be directed to advising the public on sensible sun exposure and limiting excessive damaging sunburn. The general public should be aware of the current classification of skin types with regard to sun exposure. These are type 1—

never tans, always burns; type 2—tans with difficulty, burns frequently; type 3—tans easily, burns rarely; type 4—tans easily, never burns; type 5—Indian or equivalent shade of skin; type 6—Afro-Caribbean. People should be taught to recognise their own skin types and those of their children and should realise that skin types are genetically determined, and that continual sun exposure will not convert a type 1 skin to a type 4 skin. Those with type 1 and type 2 skin should recognise that sun tanning is unlikely to be achieved without causing a degree of skin damage and significantly increasing their risk of skin cancer. This applies particularly to red-haired individuals with pale skin. All individuals, whatever their skin type, should be educated as to the importance of restricting excessive sun exposure in infants and children.

The approach to avoiding sun exposure should be based on several steps. These include: (1) natural protection—avoiding sun exposure during the hours around noon during sunny periods of the year in all countries, particularly those in the Mediterranean; (2) seeking the shade of a tree or sun umbrella in order to limit direct sun exposure; (3) wearing adequate sunscreening clothing the importance of which should be stressed. The sunscreening capacity of a broad-brimmed hat worn by both sexes and by all ages, and the sunscreening ability of tightly woven but cool comfortable clothing, should be emphasised. (4) Only after the above three measures have been emphasised should the public be encouraged to use high SPF sunscreens. The approach to these sunscreens should be that they are a supplement to common sense natural protection measures, and not preparations which allow unlimited excessive sun exposure. The general public should understand the sun protection factor (SPF) labelling system for sunscreens, and should recognise that this gives information on the screening capacity of the product in question for UVB radiation. They should be aware that UVA radiation is an additional but at present unquantitated hazard. They should be encouraged to seek sunscreening preparations which in addition to having an SPF number state that they have some UVA screening properties. The public should have some knowledge of the SPF numbers suitable for their skin. In general, this will mean the recommendation of SPFs 15 and higher for types 1 and 2 skin individuals, and SPFs of 8 and upwards for those with types 3 and 4 skin. The public should also be informed as to the hazards of sunbed exposure. Studies in Scotland [7] and in Canada [16] have shown that excessive use of sunbeds is associated with a relative risk of developing malignant melanoma of 2 for males and an increased risk of developing malignant melanoma in females. They should be discouraged from the use of sunbeds for this reason and also because of the other recognised cutaneous side-effects of artificial UVA exposure.

Educational requirements for secondary prevention of malignant melanoma

Secondary prevention of malignant melanoma involves recognising early malignant melanoma at a point in time when prompt surgical treatment can be expected to bring about complete cure. At the present time a number of secondary prevention campaigns are being actively pursued in European countries. Secondary prevention campaigns should carry publicity directed to the general public informing them of the features of pigmented lesions which could be primary malignant melanoma and advising them to seek medical advice without delay if such lesions are recognised. It therefore follows that a first step in the organisation of secondary prevention campaigns is to update education and preparation of the medical profession to deal with the anticipated increased workload. This may involve update meetings and education for primary care doctors, dermatologists, community nurses and others. The country in question must have available facilities for rapid biopsy and pathological examination of lesions which are regarded as clinically suspicious of malignant melanoma. These biopsies may either be carried out in the community or in hospitals. Pathologists in the reporting centres must also be prepared for an increase in workload. Only after this professional preparation has been completed should any public education commence. Public education material aimed at secondary prevention of malignant melanoma will include clear information on why recognition of malignant melanoma as early as possible is of vital importance for the individual, and will include descriptions with illustrations of lesions which are early malignant melanoma and lesions which are not. The melanoma 7-point checklist (change in size shape or colour of a new or pre-existing brown or black cutaneous lesion, diameter of over 7 mm, inflammation, crusting and itch) and the American ABCD (asymmetry, irregular border, irregular colour and diameter of over 1 cm) of malignant melanoma may also be helpful. Clinical photographs, diagrams and lists such as these should be included in posters, leaflets and other educational material. Secondary prevention campaigns should involve the use of all the appropriate types of media publicity. Most groups who have carried out secondary prevention exercises have reported that information disseminated through the television services prompted the largest number of self referrals. In addition, however, information in national and local newspapers, on the radio, on billboards in large towns, on posters in pharmacies and other public places, and via the distribution of leaflets are all worthwhile. It is important, however, in preparing illustrated material, to seek the help of educational psychologists and possibly those involved in the advertising industry. For many members of the public who have no medical background, even simple clinical photographs can be alarming, and slogans such as "Fight the black cancer!" can give negative associations causing fear, alarm and possibly a tendency to deny the existence of disease rather than to seek help. Current secondary melanoma education campaigns in progress in Germany have concentrated specifically on the psychological aspects [18], and the importance of imparting information to the public in a non alarming fashion. The approach to public education is very different to that required for professional education, and the need for appropriate evaluation of the message perceived by the public has perhaps been underestimated in some previous campaigns. A possible solution to this problem is to have available several posters and leaflets. Some individuals will welcome factual information and illustrations and will respond to these while others will prefer a gentler method of distributing information with diagrams or photographs of non-clinical situations illustrating, for example, examination of the skin to identify early pigmented lesions. Whatever the method which is decided best for the country in question, it is important that material gives information on what the individual should do if he suspects early malignant melanoma.

EVALUATION OF PRIMARY AND SECONDARY MELANOMA EDUCATIONAL ACTIVITIES

At present, although many countries are active in melanoma education, levels of evaluation of these campaigns are very variable, and in some countries little, if any, evaluation has been

carried out. The final evaluation end-point for both primary and secondary education campaigns is a fall in age-specific and age-adjusted mortality rates. In principle this could be due either to disease prevention, to earlier treatment of more curable disease or to advances in therapy. If falling mortality rates are thought to be due to earlier presentation with curable disease, the question of lead time bias must be borne in mind.

The final audit outcome measure of the efficacy of a primary prevention campaign is a falling incidence of malignant melanoma. In view of the current 6% per annum increasing incidence of malignant melanoma, this may take some time to achieve. At present, the latent period between excessive UV exposure and development of frank melanoma is not well established, but observations on childhood sunburn suggest that this latent period may be at least 10–15 years. The results of primary prevention campaigns will therefore not be apparent in the short term, and countries wishing to adequately evaluate primary prevention campaigns must have good cancer registration data including good information on all primary cutaneous malignant melanomas in order to detect changes in incidence rate.

Evaluation of secondary prevention campaigns hinges initially around assessment of changing tumour thickness measurements in the educated population, and in time a reduction in melanoma-related mortality. Changes in Breslow thickness measurements should be observable in the population within 1–2 years of educational activities. It would be anticipated, if the appropriate population has received the message regarding melanoma, that the initial result of education will be a rise in the numbers of patients presenting with melanoma in all thickness groups. This is because the melanomas prevalent in the educated population have come forward for treatment. Thus, in the first year or two after the campaign it is not discouraging to see no change or even a rise in the number of thick tumours. However, it should be confidently anticipated, if the campaign has been a success, that following this clearing of prevalent melanomas the numbers of thick tumours should proceed to fall. It is essential that a fall in numbers of thick tumours is observed, rather than just a rise in the proportion of thin tumours. There is still the unresolved problem of whether or not all thin tumours (i.e. those under 0.7 mm at time of diagnosis) have the capacity to metastasise, and therefore a rise in proportion of thin tumours is not convincing evidence that a fall in mortality will subsequently be seen.

Many studies have looked for a reduction in the rate of rise in mortality rather than an absolute fall. In a situation where the incidence of melanoma is rising rapidly, this is perhaps realistic, but it is not as satisfactory an end point as an observed downward trend. At present the only centre from which such a downward trend has been observed is in the West of Scotland, where 6 years after an educational exercise a downward trend in the mortality for females observed at a time when the mortality for females in the rest of Scotland (non-intervention area) shows a continuing upward trend. For males the upward trend continues in both intervention and non-intervention groups, but the slope of the curve is shallower in the intervention group [R.M. Mack and D. Hole].

In parts of the world where full assessment of mortality and pathological details is not possible, surveys of public knowledge of melanoma can be carried out using the so-called KAP domain, i.e. knowledge, attitude and practice. This is well recognised in the field of smoking knowledge and action. Much work in this area is going on at the present time with regard to non-melanoma skin cancer in Australia, where telephone surveys are regularly carried out to assess knowledge of the use of sunscreens, actual purchase of sunscreens and application of sunscreens. In European countries with cancer registries which are not yet fully equipped to assess incidence and mortality this method of evaluation would give some indication of changing attitudes to sun exposure. It is also of value to determine which message carrier has had the greatest impact.

A longer term indication of response to education would be a monitoring of risk markers of melanoma. It has already been well established that numbers of naevi are the strongest risk factor yet recognised for melanoma, and surveys of cohorts of children and young adults with regard to naevus counts would be an indication that the public's behaviour is improving with regard to risk-taking which can put them at future risk of melanoma. Studies like this will require careful co-ordination to identify appropriate cohorts of children, and clearly have to be done over long periods of time.

In conclusion, there is no single measure which can currently be advocated as the assessment required for melanoma education campaigns in Europe. There is therefore a need for monitoring of public knowledge, attitudes and practice as well as epidemiological data with regard to incidence, pathological features of known prognostic significance and mortality.

CONCLUSION AND FINANCIAL REQUIREMENTS

The interest in melanoma education in Europe at the present time is considerable. Many countries have adopted their own melanoma education activities, some nationally organised, and some small scale based on individual hospitals. There is a real need for exchange of information amongst those involved in melanoma education, to ensure that material available can be shared between member countries as appropriate, and that time and expense are not wasted in duplicating very similar material. The financial requirements for these campaigns are very variable and depend to a large extent on whether or not the individual countries use volunteer examinations, build in an element of skin cancer education and even screening to the standard health programmes, or use commercial organisations to assist in the preparation and distribution of educational material. Communications from Norway and from Germany indicate that sums of £200 000 and £1 500 000, respectively, are currently being set aside for this activity, and large campaigns are also in progress in other countries, such as Switzerland and Sweden. Education requires a significant budget, but the size of the budget will vary according to the size, and length of the campaign and its structure. Whatever type of campaign is decided upon, it is the combined view of all those involved in the EORTC meeting that a measure of evalution must be built in to it. It is also strongly recommended that those involved in these campaigns publish details of their plans, of interim results, and of final results as soon as they are available in order to facilitate sharing of information and experience as to the value of different educational activities in the different European countries.

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Tumour Markers and Oncogenes in Lung Cancer

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INTRODUCTION

LUNG CANCER is the leading cause of cancer death with approximately 90% of affected patients dying within 1 year of diagnosis. Unlike in several other cancer types, the incidence of lung cancer has been steadily growing, possibly due to the strong association of lung cancer and cigarette smoking. On the basis of both clinical behaviour and prognosis, lung cancers can be divided into small cell lung cancer (SCLC) and non-small cell lung cancer (NSCLC). This division has previously been thought to reflect differences in the cell types from which these tumours arise, but it has been recently suggested that both classes of tumours may have a common progenitor, because a significant fraction of NSCLC tumours (20%) exhibit neuroendocrine properties [1]. In addition, single tumours can contain mixtures of cells including both NSCLC and SCLC types (see below). Finally, transitions from SCLC to NSCLC phenotypes have been reported in several cases [2]. In spite of these results, the distinction between SCLC and NSCLC is clearly useful from the clinical standpoint.

SCLC accounts for approximately 25% of all new cases of lung cancer. Long-term survival or complete remission in SCLC is directly related to the response to cytotoxic therapy; surgical treatment is not a useful alternative. NSCLC includes adenocarcinoma (30%), squamous cell (25%) and large cell (15%) carcinoma. For NSCLC patients, resectability of the primary tumour is the major prognostic factor.

During the last 10 years, medical and surgical intervention has resulted in little change in the 5-year survival rate for lung cancer. Therefore major efforts in research are being directed to identifying relations between specific tumour markers and gene alterations and the clinical behaviour of the tumours. Relevant results from such studies could provide more accurate and useful diagnostic tools, which could be used in a more singular disease assessment and treatment.

TUMOUR MARKERS IN LUNG CANCER

Due to the different therapeutic strategies employed in the treatment of SCLC versus NSCLC, non-invasive diagnostic methods have been more extensively studied in SCLC. Since in general SCLC is highly sensitive to chemotherapeutic agents and has frequently metastasised by the time of clinical presentation, systemic chemotherapy plays a major role in the management of these patients. Therefore reliable tumour markers, in addition to imaging techniques, could yield valuable information in the treatment of these patients.

A wide variety of potential tumour markers has been identified from cell lines established from SCLC tumours (Table 1). These include several enzymes involved in the neuroendocrine amine precursor uptake and decarboxylation (APUD) system and some peptide growth factors and their receptors. Although some of these markers are useful in differentiating between SCLC and NSCLC, several of them have also been identified from a subset

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