Cutaneous Malignant Melanoma: Screening and Diagnosis

ABSTRACT

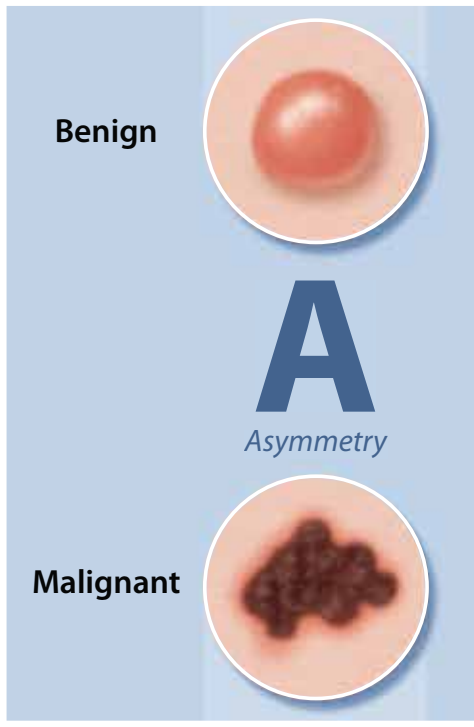
Cutaneous Malignant Melanoma has the highest morbidity and mortality among different types of skin cancers; as one of the most common malignancies in the world. Early detection and diagnosis of Cutaneous Malignant Melanoma followed by adequate surgical excision are the most important tasks in management of this potentially curable skin cancer. Screening methods and diagnostic criteria including clinical and dermoscopic findings will be discussed in this article.

KEYWORDS: Melanoma, Dermoscopy, UV Exposure, Epiluminescence Microscopy (ELM)

Pre-test CME Quiz

Introduction

Melanoma is a tumor arising from melanocytes. The incidence of melanoma and patient mortality rates has been rising in recent decades. It affects the younger population more than most cancers. Therefore it represents a substantial public health problem. Among skin cancers, malignant melanoma is the least common but the most serious one. Up to 20% of patients develop metastatic disease, which usually is associated with death. However, early detection and appropriate excision of the tumor leads to a cure rate of over 90% in low risk melanoma patients. Surgery including removal of the primary tumor and involved lymph nodes along with chemotherapy is



Difference in asymmetry between benign and malignant moles

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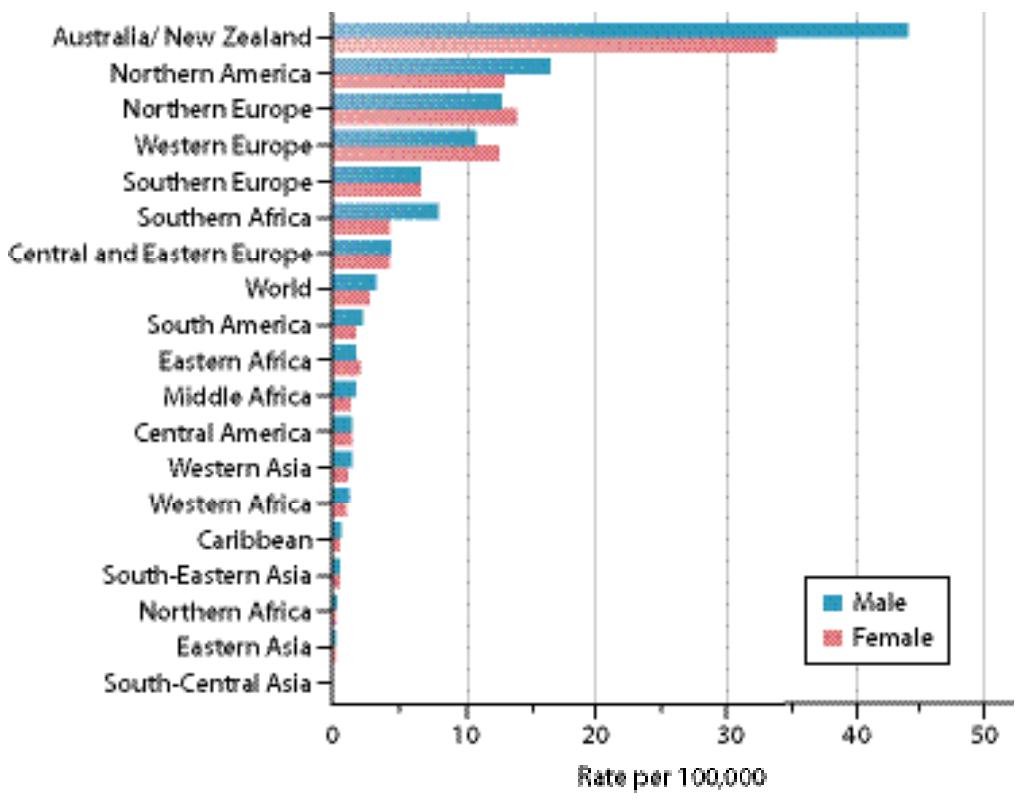
still the most important part of treatment of melanoma. Thus, melanoma screening and diagnosis is very important topic for general practitioners.

Epidemiology

Melanoma incidence is variable based on geographic location. In United States Skin cancer is the most common neoplasm.[1] Three percent of skin cancers are cutaneous malignant melanoma; however it accounts for the most numbers of deaths in skin cancers.[2] In Australia melanoma is the third most common cancer in men and women. It is responsible for the 75% of skin cancer death in this country. The highest incidence of melanoma is reported in Auckland, New Zeland with a rate 40.2/100,000 both in men and women.[3] In Asia the incidence is as low as approximately 1/100,000.[4] In Europe the highest incidence has been recorded in Switzerland and Scandinavian countries. In Australia and North America incidence of melanoma is higher in Males than females. However in all European countries females suffer more than males from melanoma.[5] Based on the information driven from national cancer registries and also the international agency for research on cancer, in Europe the incidence of melanoma has raised within the past two decades.[6] In Unites States, the lifetime risk of developing invasive melanoma was 1 in 1500 for persons born in 1935, 1 in 600 persons for those born in 1960, 1 in 150 persons for those born in 1980 and is estimated to be 1 in 62 persons for individuals born in 2006.[7,8] Based on the national cancer institute publication in United States of America the diagnosis of melanoma is made averagely at 57 years of age and the median age at death is 67 years.[9] Cancer Research UK has demonstrated the world age-standardized incidence of Malignant Melanoma in different parts of the world (Figure 1).[10]

Table 1 shows some compari-

Figure 1: The World Age Standardized Incidence of Malignant Melanoma in Different Parts of the World



Cancer Research UK, http://www.cancerresearchuk.org/cancer-info/cancerstats/types/skin/incidence/uk-skin-cancer-incidence-statistics Accessed Feb. 25, 2013)

Table 1: Comparative melanoma incidence figures for selected states and countries worldwide for the time period 1998–2002

Country	Incidence (per 10 subjects)	
	Male	Female
Queensland Australia	55.8	41.1
New South Wales Australia	38.5	26.5
Victoria Australia	27.3	23.4
New Zealand	34.8	31.4
US SEER 14 registries non-Hispanic whites	34.8	31.4
Switzerland, Vaud	34.8	31.4
Norway	34.8	31.4
Sweden	34.8	31.4
Denmark	34.8	31.4
Latvia	34.8	31.4
Lithuania	34.8	31.4
Estonia	34.8	31.4
Belarus	34.8	31.4
Serbia	34.8	31.4

Epidemiology of invasive cutaneous melanoma; R. M. MacKie, A. Hauschild & A. M. M. Eggermont Annals of Oncology 20 (Supplement 6): vi1–vi7, 2009, doi:10.1093/annonc/mdp252

son among some of the countries worldwide.[5,10]

Distribution of melanoma in parts of the body is different between males and females. In males melanoma occurs mostly on the trunk, while in females the most common involved parts are the legs. Figure 2 depicts a diagram showing where melanoma is most possible to appear on human body (Figure 2).[9]

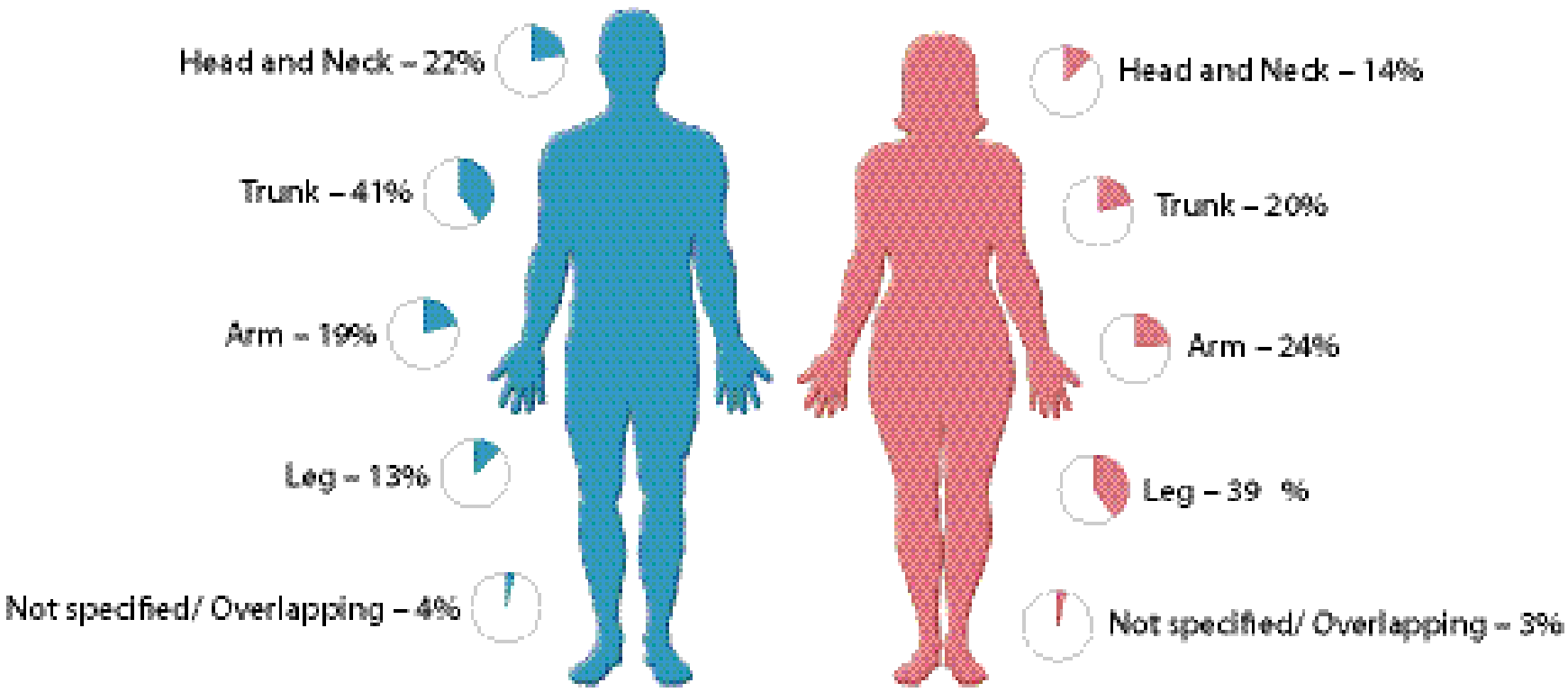
Risk factors

There are both environmental and genetic risk factors for developing melanoma and certainly not all melanoma are sun related (Figure 3). Heavy Sun exposure and sparse amount of melanin pigment in skin, hair and eye are important factors. Elwood *et al.* mentioned burning due to sun exposures is the major risk factor of melanoma.[11]

Greater exposure of fair-skinned population and those who have genetic predisposed nature, to natural ultraviolet (UV) radiation has been proposed as the main reason for the increased incidence of melanoma in the past 3-4 decades.[5,12]

Epidemiologic studies suggest that periodic intermittent intense sun exposure (particularly during critical time period of childhood and adolescence) rather than long continued heavy sun exposure is the most important factor in melanoma causation labelled as "intermittent exposure hypothesis". Sunburn history notably blistering and peeling burns are indicators of intermittent intense sun exposure. The other major risk factor is increased genetic susceptibility, including presence of naevi such as large congenital and dysplastic naevi or even increased numbers of typical naevi, family history,

Figure 2: Distribution of Melanoma on Body Parts.



Cancer Research UK, http://www.cancerresearchuk.org/cancer-info/cancerstats/types/skin/incidence/uk-skin-cancer-incidence-statistics Accessed Feb. 25, 2013)

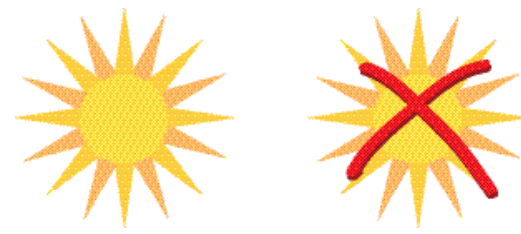
and personal history of melanoma. Compromised immune system such as HIV patients and organ transplantation patients are less resistant to develop skin cancers including melanoma.[13]

Figure 3: Melanoma Risk Factors

Higher socioeconomic level, indoor occupations, body mass index and exposure to some chemicals such as arsenic have been mentioned as risk factors in developing melanoma. Table 2 demonstrates some newly understood risk factors and the impact of these factors on some specific characteristics of Melanoma.[14]

Intermittent intense sun exposure has been mentioned as the major causative factor in Melanoma.[15,16,17,18,19] British Association of Dermatologists (BAD) published the U.K. guidelines for the management of cutaneous melanoma in 2010. BAD advice people with a family history of Melanoma, those with fair skin and individuals having several skin naevi reduce UV

Table 2: Risk Factors for Melanoma



Risk Factor	Impact
Sun (UV) exposure	
Cumulative	May influence risk in the head/neck region
Sporadic	Intense, intermittent exposure and blistering sunburns in childhood and adolescence are associated with increased risk
Artificial UV exposure (tanning)	Indoor tanning bed exposure significantly increases risk. The use of psoralen UV therapy may increase risk.
Family history	Occurrence of melanoma in a first- or second-degree relative confers increased risk. Familial atypical mole melanoma syndrome within a context of a history of melanoma confers an even higher risk.
Dysplastic nevi	Markers for increased risk. Increasing impact with family history.
Other nevi	A large number of melanocytic nevi and giant pigmented congenital nevi confer increased risk.
Age	Age-related incidence rises wtih increasing age.
Gender	Greater overall in men. Greater in women until age 40 then 2:1 males/females by age 80.
Skin type/ethnicity	Increased incidence in those with fair complexions and red headed, those who burn easily, tan poorly, and freckle
Occupation	Greater incidence in indoor workers, as well as those with higher education and income, pilots and firefighters
Socioeconomic status	Increased with higher incomes
Ionizing radiation	Possible association
Chemicals and pollutants	Possible association with arsenic exposure
Diet and nutrients	Elevated body mass index may increase risk

Darrell S. Rigel, Epidemiology of Melanoma, Seminars in Cutaneous Medicine and Surgery (December 2010), 29 (4), pg. 204-209.

Table 3: Determination of Risk Factors Required Estimating the Probability of Developing Melanoma Over the Next 5 Years

General examination

For all patients
"Do you have a light, medium, or dark complexion?"

For men only
"Did you ever get a blistering sunburn?"

For women only
"After repeated and prolonged exposure to sunlight, at the age you are now, would your skin become very brown and deeply tanned, moderately tanned, lightly tanned, or not tan at all?"

Examination of the back and shoulders

For all patients
Count the number of small moles on the back (up to 12 for women and up to 17 for men) and
Determine the extent of freckling on the upper and lower back by comparison with standard photographs

For men only
Determine whether there are ≥ 2 large moles on the back and
Determine whether there is severe solar damage on the shoulders b comparison with standard photographs

NOTE: All patients were administered a full skin examination including an examination of the back and shoulders.

Thomas R. Fears, DuPont Guerry IV, Ruth M. Pfeiffer, Richard W. Sagebiel, David E. Elder, Allan Halpern, Elizabeth A. Holly, Patricia Hartge, and Margaret A. Tucke, Identifying Individuals at High Risk of Melanoma: A Practical Predictor of Absolute Risk; J Clin Oncol 24:3590-3596)(http://www.cancer.gov/melanomarisktool).

exposure through limiting their outdoor activities in their life and avoiding tan-bed usage.[20]

Screening

Primary care physicians' familiarity with risk factors helps to screen high risk individuals and diagnose melanoma at earlier stages. Furthermore, patients' education about important characteristics of melanoma and emphasis on monthly self-examination for any suspected skin lesion allow earlier diagnosis of melanoma.[21] Patients with risk factors are encouraged to be assessed by a dermatologist for a complete skin examination.[22]

Fears et al designed a tool according to the potential risk factors to predict the 5-year absolute risk of melanoma. This model helps to find individuals at increased risk of melanoma.[23] The National Cancer Institute provides this tool at their formal website. This tool enables people who are residents of Unites States to find out about their five-year absolute risk of melanoma (table 3).[23]

The first Monday of May has been selected as Melanoma Monday by the American Academy of Dermatologists SPOT program. Orange will be the colour of this day. The goal is to hope that this Monday will keep nation aware of melanoma risk to prevent and detect Malanoma.[24]

Baade P, *et al.*, reviewed the mortality rate of melanoma in both

Table 4: British Association of Dermatology Recommendations for Screening and Surveillance of High-risk Individuals

Patients who are at moderately increased risk of melanoma should be advised of this and taught how to self-examine. This includes patients with atypical mole phenotype, those with a previous melanoma, and organ transplant recipients (Level Ia, Grade B)

Patients with giant congenital pigmented naevi are at increased risk of melanoma and require long-term follow up (Level IIIa, Grade B)

Individuals with a family history of three or more cases of melanoma, or of pancreatic cancer, should be referred to a clinical geneticist or specialized dermatology services for counselling. Those with two cases in the family may also benefit, especially if one of the cases had multiple primary melanomas or the atypical mole phenotype (Level IIa, Grade B)

Marsden JR, Newton-Bishop JA, Burrows L, Cook M, Corrie PG, Cox NH, Gore ME, Lorigan P, MacKie R,Nathan P, Peach H, Powell B, Walker C; Revised U.K. guidelines for the management of cutaneous melanoma 2010. Br J Dermatol. 2010 Aug;163(2):238-56. doi: 10.1111/j.1365-2133.2010.09883.x. Epub 2010 Jul 1. British Association of Dermatologists Clinical Standards Unit.)

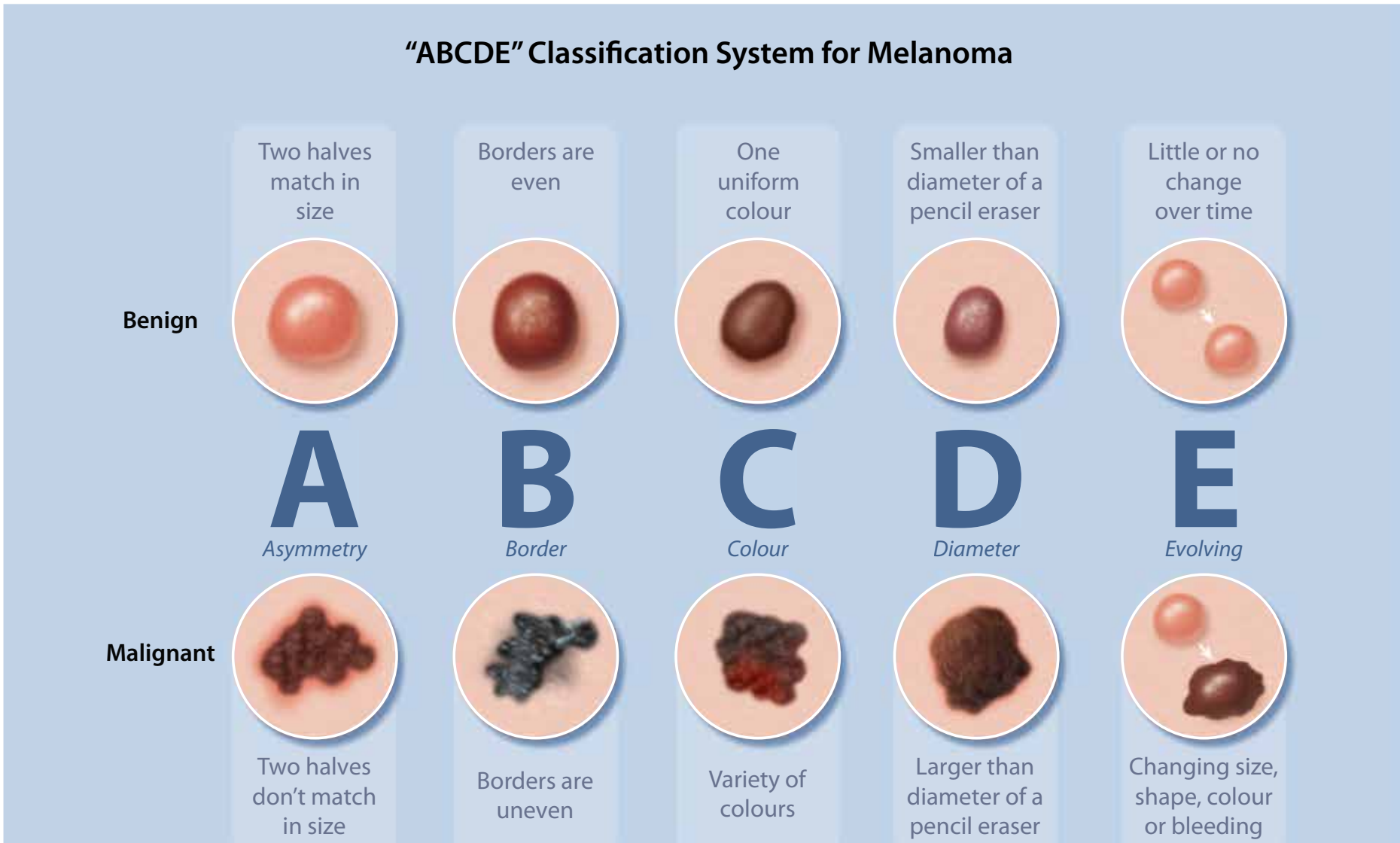
men and women younger than 55 years of age in Australia. They found decreased mortality in this category; however, it is still unclear whether there is any association between tendencies in earlier discovery and mortality.[25] According to the Clinical Practice Guidelines for the Management of Melanoma in Australia and New Zealand in 2008, because of the absence of evidence to prove the effectiveness of skin examination screening in decreasing mortality in Melanoma, no skin screening is recommended.

On the other hand they mention that regular clinical examination and self screening education in high-risk people would be beneficial. Therefore they recommend educating these patients and their partners to detect suspicious lesions which are supported by full body examination every six months, total body photography and dermoscopy based on the clinician judgment. Genetic counselling to detect melanogenic mutation could also be considered in personal and family history of melanoma.[25]

Table 4 demonstrates the British Association of Dermatologists (BAD) recommendations for screening and examination of High-risk people. According to the BAD criteria, patients with moderate risk of melanoma have increased risk of developing melanoma approximately 8-10 times more than general population.[20]

The British Guideline suggests that patients having Giant congenital naevus (diameter size more than 20 cm or more than 5 % of body surface) have more than ten times risk of developing melanoma than general population and they need to be monitored by expert clinicians.[20,26,27] Family history of

Figure 4: "ABCDE" Criteria in the Diagnosis of Malignant Melanoma



Melanoma predisposes people to increased risk of Melanoma. Goldstein *et al.,* discovered possible common susceptibility genes to develop Melanoma and pancreatic Cancer.[28]

Diagnosis

Early detection is the key to improve prognosis in melanoma. In spite of characteristic appearance of melanoma, there is no single clinical feature that can ensure or exclude a diagnosis of melanoma. The ABCD criteria were first described in 1985.[29] It stands for Asymmetry, Border, Color, and Diameter. The diagnostic accuracy of ABCD checklist has been proved in many studies.[30,31,32]

ABCD criteria are sensitive to differentiate between benign and malignant skin lesions; however, the specificity of this method is not very clear.[33] Abbasi *et al.,* recommended the inclusion of "E" for "Evolving" to the ABCD criteria. It shows change of the lesion over time which is important in differential diagnosis.[34] Change of pigmentation, growth, bleeding, and recent soreness and pain could be signs of malignancy in a typical nevus. Figure 4 a & b shows ABCDE changes indicating malignant transformation of some

benign lesions to Melanoma.[35]

In most cases of early onset melanoma, evaluation of colors and fine structures of the epidermis and deeper tissues is not possible to be recognized by a naked eye. Therefore epiluminescence microscopy (ELM), which is the technologic basis of Dermoscopy could be used to have better evaluation of skin lesions. Meta-analysis of studies performing Dermoscopic assessment of pigmented skin lesions was accomplished by Vestergaard *et al.*, They proved that dermoscopy is more sensitive than naked eye in diagnosis of melanoma.[37] There are different kinds of dermoscopic examination including dermatoscopy, Steromicroscopy and videodermatoscopy.

In dermoscopic methods the pigmented skin lesion is covered with a liquid such as alcohol, oil or ultrasonographic gel. This liquid decreases the reflectivity of skin and increases the transparency of stratum corneum. Using the optical system skin structures including epidermis, dermoepidermal junction and the papillary dermis could be visualized. The location and distribution of melanin are also identifiable. Ultrasonographic gel is the best immersion fluid. It makes good adhesion of dermatoscope to skin so that facilitates visualizing the lesions and easier application to difficult areas such as skin creases.[38] Figure 5 a-e demonstrates different dermoscopic tools.[39,40,45]

Dermoscopic devices light source could be polarized or non-polarized. In polarized light dermoscopes, there is no need to immersion fluid. The lens in this polarized instrument takes the scattered light reflected by skin and allows only the one-plane light waves to be transmitted.[41] The polarized dermatoscopy could also be used as a non-contact examination. Melanin and vessels are better visualized on Polarized dermotoscopy so that provides higher value in diagnosis of malignant

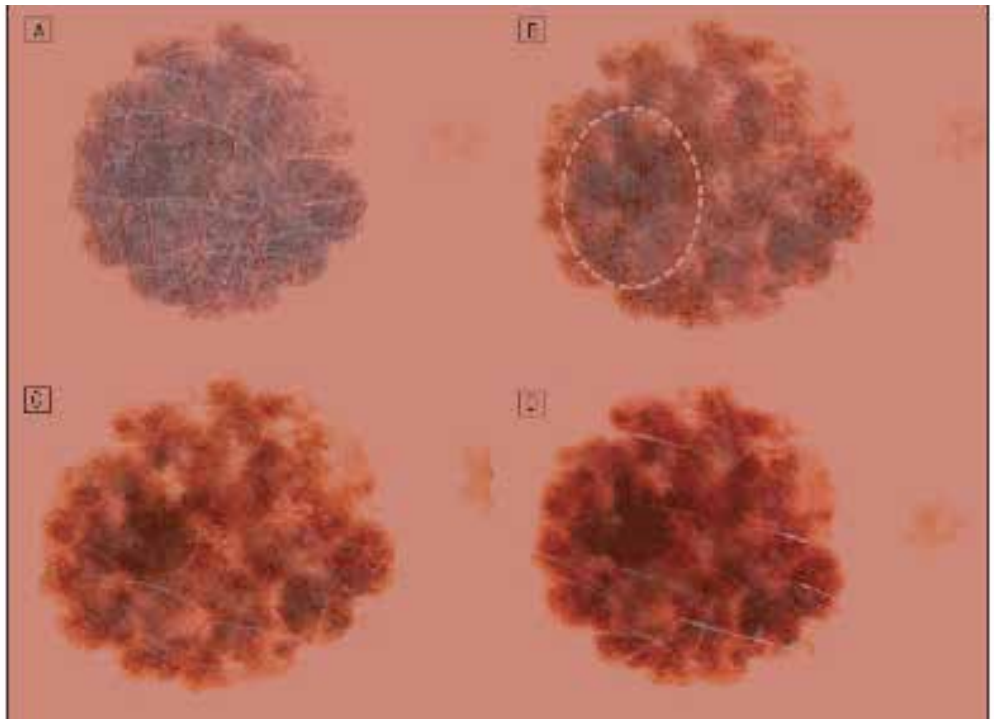
Figure 5: Examples of Dermoscopic Tools

Immersion oil dermatoscope, http://en.wikipedia.org/wiki/File:Dermatoscope1.JPG, Accessed February 25, 2013).

Stereomicroscope, http://www.dermoscopy.org/atlas/1step/img/stereo.jpg (Accessed February 25, 2013).

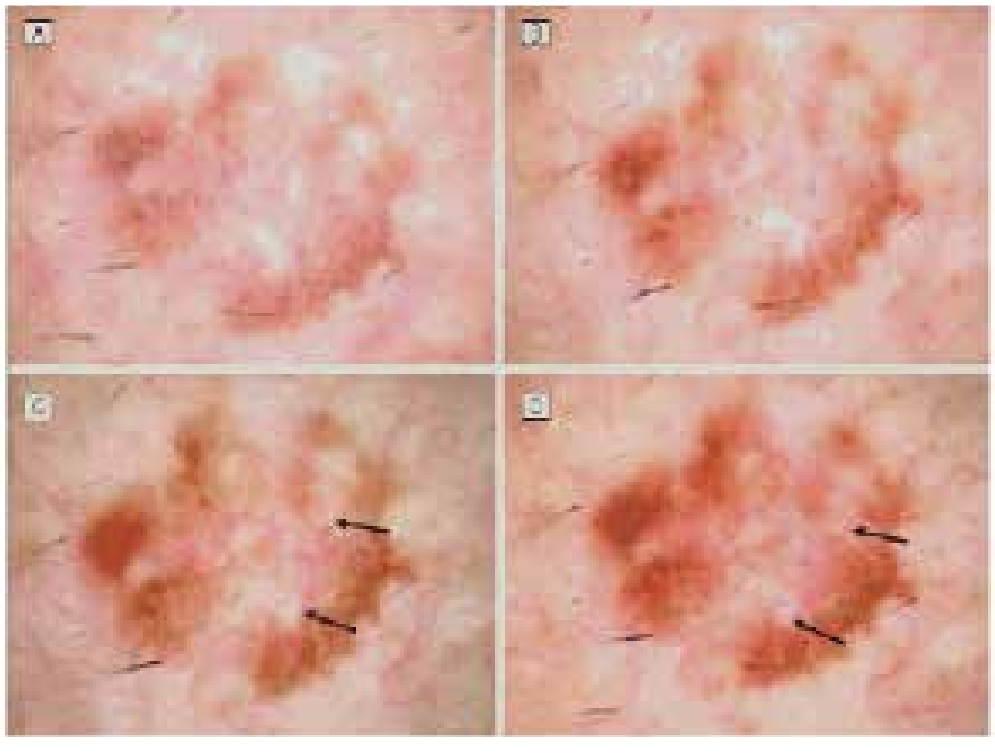
Hofmann-Wellenhof R, Wurm EM, Ahlgrimm-Siess V, Richtig E, Koller S, Smolle J, Gerger A. Reflectance confocal microscopy--state-of-art and research overview. Semin Cutan Med Surg. 2009 Sep;28(3):172-9. doi: 10.1016/j.sder.2009.06.004.

Figure 6: Examples of Different Visualization of a Dysplastic Nevus.



A dysplastic nevus shown by clinical photography (A) nonpolarized light contact dermoscopy (NPD) (B) polarized light contact dermoscopy (C) and polarized light noncontact dermoscopy (D) The dark-brown colors are more prominent under polarized light dermoscopy, and more light-brown colors are seen under NPD. In the NPD image there is a blue-white veil (highlighted by a dotted oval), which is less prominent to almost absent in the polarized dermoscopy images.

Figure 7: Examples of Different Visualization of a Melanoma



Melanoma shown by clinical photography (A) nonpolarized light contact dermoscopy (NPD) (B) polarized light contact dermoscopy (C) and polarized light noncontact dermoscopy (D). This melanoma had evidence of regression (fibrosis) on histopathological examination. Shiny-white streaklike areas within the melanoma (arrows in C and D), believed to represent fibrosis, are visible under polarized but not NPD.

changes. Figures 6 and 7 provide some examples of different visualization of a dysplastic nevus and a Melanoma using polarized and nonpolarized dermatoscopic examination.[42]

Salerni *et al.*, suggested digital total body photography and digital dermatoscopy as a useful method in high risk patients for early detection of melanoma.[43]

Reflectance Confocal Microscopy was used by some investigators. Hoffmann Wellenhoff *et al.*, and Pellacani *et al.*, found this method very useful in interpretation of dermoscopic findings and also presurgical evaluation of pigmented lesions.[44,45] Figure 8 demonstrates the pictures produced by confocal microscope in a nevus and melanoma.

Pigment distribution, vascular characteristics of the lesion and color variance in different parts of the lesion are important in dermoscopic examination.[46] There is a 7-point dermotoscopic checklist which has been valuable in dermatoscopic examination.[47,48] Finding gray-blue areas particularly with irregular pigmentation in the lesion is important. Atypical vascular pattern of the lesions should be noticed including irregular distribution of vessels associated with melanin pigmentations. Atypical and irregular pattern of pigmentation containing depigmentated scarlike areas inside the lesion are the other important der-

matoscopic patterns. Radial and asymmetric lines at the edge of the lesion are of diagnostic value. Irregular dots and globules inside the examined lesion are to be notified as well.

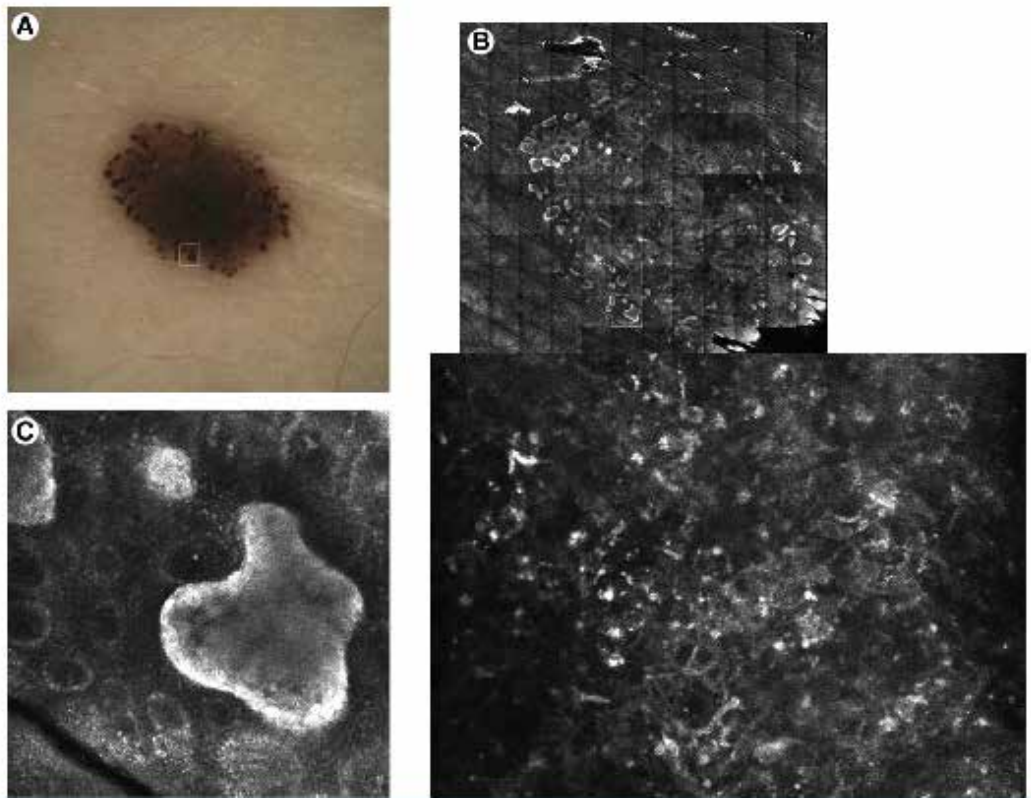
Haenssle *et al.,* concluded that this 7-point dermotoscopic checklist is not very sensitive but it is highly specific in prospective surveillance of patients at increased melanoma risk.[48]

Annesi *et al.,* reported the most sensitive and specific features of ELM in diagnosis of thin Melanoma. Atypical pigment network particularly with sharp margins, presence of irregular nonuniform brown globules, nonuniform pigment distribution and light brown structureless areas are among these features. Table 5 defines ELM criteria in diagnosis of melanocytic lesions and Figure 9 shows an example of ELM-histopathologic correlation.[49]

1. How useful are the ELM tools?

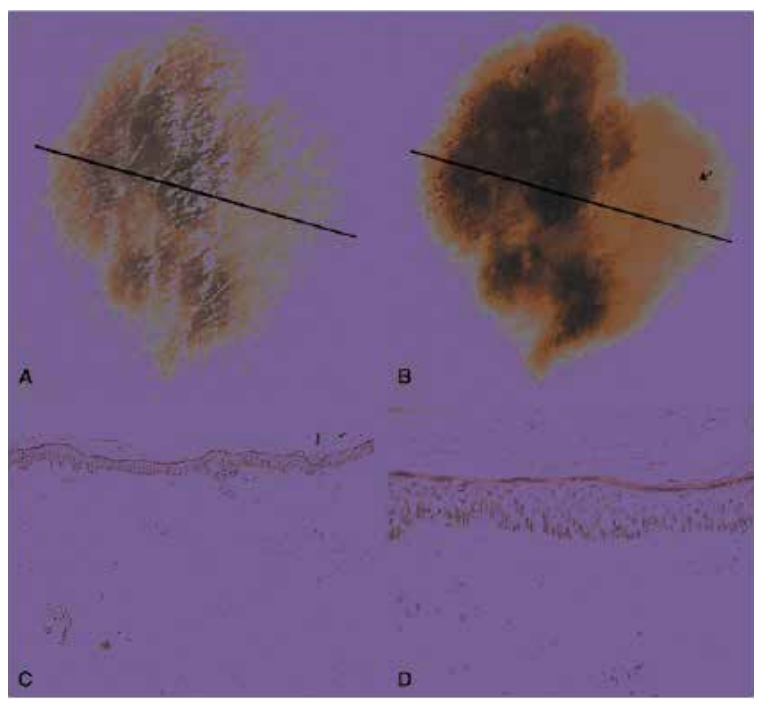
Guitera and Menzies compared the ELM technologic instruments

Figure 8: Confocal Microscope in a Nevus and Melanoma



Reflectance Confocal Microscopy: (A) Clinical image of a Spitz nevus. Image taken by a camera attached to the confocal microscope. By navigating through the clinical image to a special region of interest, which can be assessed by the confocal microscope, a correlation between the macroscopic and the confocal image is provided. (B) RCM mosaic of a Spitz nevus Horizontal square mosaic of 6 _ 6 mm consisting of contiguous 500 _ 500 _m images. (C) 500 _ 500 _m image of a Spitz nevus. The image corresponds to the white cubes in Fig. 2A and B. D. Melanoma (MM). MMs typically show solitary, polymorphic irregularly shaped tumour cells. Atypical cells may be found ascending in several layers of the epidermis, representing pagetoid spread.

Figure 9: Clinical Image of a Thin Melanoma Selected for ELM-histopathologic Correlation



B, Thin melanoma shows light brown structureless areas (arrow) on ELM examination. A line has been drawn across the light brown structureless area with computer software. C and D, Histologically, light brown structureless areas are characterized by flattening of rete ridges and marked scattering of atypical melanocytes in upper epidermal layers in the absence of significant dermal changes. (C and D, Hematoxylin-eosin stain; original magnifications: C,332; D, 3200.)

Table 5: Working Definitions of ELM Criteria

Criterion	Definition
Pigment network	
Thin or delicate	Grid of brown to dark brown lines over a diffuse, light brown background Thickness of grid lines similar to that observed in normal, well-tanned skin Grid lines appear hyperpigmented (darker lines compared with average line darkness within the lesion) and thickened (broader lines compared with average line broadness within the lesion)
Regular and thin	Pigment network with relatively uniform thin lines delimiting uniform-sized circular or oval meshes
Irregular and thin	Pigment network with thin lines of relatively uniform thickness delimiting variably sized and shaped meshes
Irregular and broad (atypical)	Pigment network with hyperpigmented and thickened lines delimiting variably sized and shaped meshes
Sharp margin	Focal abrupt transition (i.e., high contrast) in pigmentation between network margin and surrounding normal skin
Fading margin	Pigment network fades away into surrounding normal skin
Brown dots and globules	Round to oval, well-circumscribed light to dark brown pigment aggregations that are distinguished by their size (globule: a large dot)
Uniform	Relatively asymmetrical distribution of brown dots and/or globules within a lesion
Nonuniform	Relatively asymmetrical distribution of brown dots and / or globules within a lesion
Regular and uniform	Brown dots and/or globules relatively similar in size and shape distributed symmetrically within a lesion
Regular and nonuniform	Brown dots and/or globules relatively similar in size and shape distributed asymmetrically within a lesion
Irregular and uniform	Brown dots and/or globules different in size and shape distributed symmetrically within a lesion
Irregular and nonuniform	Brown dots and/or globules different in size and shape distributed asymmetrically within a lesion

Table 5 continued: Working Definitions of ELM Criteria

Criterion	Definition
Black dots	Punctiform black structures
Uniform	Relatively symmetrical distribution of black dots within a lesion
Nonuniform	Asymmetrical distribution of black dots within a lesion
Radial streaming and pseudopods	
Radial streaming	Nearly parallel, radically oriented linear brown to black structures at the periphery of a lesion
Pseudopods	Bulbous and often kinked brown to black projections that are directly connected to the tumor body or to the pigment network at the edge of a lesion
Uniform radial streaming and pseudopods	Symmetrical distribution of streaks and pseudopods at the periphery of a lesion
Nonuniform radial streaming and pseudopods	Asymmetical distribution of streaks and pseudopods at the periphery of a lesion
Pigment distribution	
Uniform	Symmetrical pigment distribution within a lesion
Nonuniform	Asymmetrical pigment distribution within a lesion
Structureless light brown areas	Structureless light brown to fawn-colored, peripherally arranged areas of variable size and shape, which are larger than 10% of a lesion The structureless areas tend to end abruptly at the edge of a lesion
Homogenous areas (blotches, irregular extensions, irregular diffuse pigmentation)	Dark brown or black areas of diffuse pigmentation with irregular shape and abrupt margins
Gray-blue areas	Irregular, confluent areas of diffuse gray-blue pigmentation
Regression pattern	This term includes one or all of the following structures:
White scar-like areas	Irregular and confluent areas of white depigmentation
Blue-gray pepperlike areas	Speckled, multiple, blue-gray dots within a hypo-depigmented area
Whitish veil	White haze or veil over a region of a lesion. It may be uniform or diffuse or may be focally variable and irregular
Atypical vascular pattern	Linear dotted or globular red structures irregularly distributed outside areas of regression and associated with other melanocytic pigment patterns

to each other and provided useful information.[41] Wolfe *et al.*, reported the low accuracy of clinical diagnosis using naked eye examination almost in one third of cases.[50] Carli *et al.*, showed 42% reduction in unnecessary excisions using dermoscopic techniques.[51] Therefore it is necessary to implement the ELM high technologic instruments for better visualization of suspicious lesions.

Although Kittler *et al.*, proved that degree of training and experience is the determining factor in diagnostic accuracy of Dermoscopy;[52] however, newly invented automatic devices has gifted more independence to the physicians who use dermoscopic techniques.[54] Sequential digital dermoscopy imaging, Total-body photography, Automated instruments, Ultrasound/reflex transmission imaging, Optical coherence tomography, Reflectance confocal microscopy, Two-photon microscopy and Nonmorphologic techniques including Magnetic resonance & Raman spectroscopy are the other invaluable tools which might be used to make a more accurate diagnosis and to decrease unnecessary biopsies.[41]

EARLY DETECTION OF MELANOMA HAS A VERY IMPORTANT IMPACT ON PATIENT SURVIVAL, ALL PEOPLE PARTICULARLY THE ONES WHO ARE AT HIGHER RISK ARE ENCOURAGED TO DO A SELF EXAMINATION ON THEIR SKIN.

2. What is the role of patient and dermatologist in screening of Melanoma?

Considering the fact that early detection of melanoma has a very important impact on patient survival, all people particularly the ones who are at higher risk are encouraged to do a self examination on their skin. However, Lamerson *et al.*, performed a retrospective study to compare the stage of disease in patient-identified melanoma and dermatologist-identified melanoma. According to their study on 200 melanoma patients they concluded that dermatologist-identified tumours were significantly less invasive than patient-identified tumours.[54] This conclusion was made by some other investigators as well.[55,56,57] Therefore, it is recommended that high risk patients to have a yearly skin examination by a dermatologist to detect melanoma as early as possible.[58,59]

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SUMMARY OF KEY POINTS

UV Xposure is one of the main risk factors particularly during childhood and adolescence.

ABCDE criteria are sensitive to differentiate between benign and malignant lesions, but not very specific.

Dermoscopy is more sensitive than naked eye in diagnosis of Melanoma.

Primary care physicians' familiarity with risk factors helps to screen high risk individuals and diagnose melanoma at earlier stages.

CLINICAL PEARLS

Change of pigmentation, growth, bleeding, recent soreness and pain could be signs of malignancy in a typical nevus.

Patients with risk factors need both self examination and examination by a dermatologist regularly.

Post-test CME Quiz

Members of the College of Family Physicians of Canada may claim MAINPRO-M2 Credits for this unaccredited educational program.

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