Cutaneous melanoma in the elderly

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The aim of this review was to analyze the difficulties in diagnosing and treating elderly patients with cutaneous melanoma. It focused on the main causes for late diagnosis and relatively poor prognosis in these patients. Early detection of melanoma is vital to reduce mortality in these patients and surgery is often curative. Adequate treatment of elderly patients with melanoma requires knowledge of the clinical features and histopathology of the disease, and the therapeutic options. This review also examined the main surgical procedures for primary melanoma and regional lymph node staging, and the curative and palliative procedures indicated for those elderly patients with advanced disease. It is expected that several molecular genetic factors will soon provide further prognostic information of possible benefit for elderly patients with melanoma. *Melanoma Res*

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Introduction

In most industrialized nations, life expectancy has almost doubled over the last century and the elderly population is now expanding dramatically. However, despite the increasing incidence of cancer and cancer-related deaths in these patients, in terms of public health the elderly seem to be neglected.

Thirteen percent of the population of the United States are aged 65 years or above and this percentage is even higher in Europe, especially in France (16%), Germany (16%), United Kingdom (16%), and Italy (18%) [1–3].

The medical care delivered to these patients has also increased and currently elderly patients account for 40% of hospital discharges and half of hospital stays [1,4,5]. Given that two-thirds of solid tumors occur in patients aged 65 years or above, and that most cancer-related deaths occur in this age group, cancer in the elderly represents an increasing health-care burden for the community [5–7].

Moreover, elderly patients often receive substandard treatment, including delayed diagnosis, inadequate staging, suboptimal surgery, and substandard medical and radiation treatment. This may be because of their comorbidities and disabilities, because of a reluctance to incorporate them into clinical trials, or because relatives and clinicians are reluctant to accept or offer standard treatment to elderly patients [4,6,8–11].

It has been shown that there is no significant difference in postoperative mortality and long-term survival between younger and older patients. However, there is slightly higher morbidity in the elderly, which can be improved by careful patient selection and meticulous perioperative care [8,11].

Elderly patients have reduced physiological organ reserve, which is not a specific risk factor for surgery [12]. Multidisciplinary management of elderly patients is mandatory, especially for those who may be candidates for major surgery.

Several indices are available to determine the impact of patient comorbidities on surgical outcome and the postoperative course [13]. The most frequently used are the Kaplan–Feinstein Comorbidity Index (Table 1), the Charlson Comorbidity Index (Table 2), and the National Cancer Institute/National Institute of Aging Index. The well-known American Society of Anesthesiologists Physical Status System is aimed more specifically at assessing the degree of illness or physical state before anesthesia and surgery and is not specific for elderly patients [5,14–19].

In addition, there are problems regarding the specific difficulties of diagnosing and treating melanoma in elderly patients. The Newcastle Melanoma Unit Database retrospectively showed that successful strategies for

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Table 1 Kaplan–Feinstein Scale

Patient	Age			
Rater	Date			
Comorbid ailment	Score			
Hypertension	0	1	2	3
Cardiac	0	1	2	3
Cerebral or psychic	0	1	2	3
Respiratory	0	1	2	3
Renal	0	1	2	3
Hepatic	0	1	2	3
Gastrointestinal	0	1	2	3
Peripheral vascular	0	1	2	3
Malignancy	0	1	2	3
Locomotor impairment (regardless of cause)	0	1	2	3
Alcoholism	0	1	2	3
Miscellaneous	0	1	2	3

Kaplan–Feinstein Index consists of 12 categories of conditions 'that might be expected to impair a patients long-term survival'. The number and severity of diseases are summed in an overall comorbidity grade.

Table 2 Charlson Comorbidity Index

Congestive heart failure	1
Peripheral vascular disease	1
Cerebrovascular disease (except hemiplegia)	1
Dementia	1
Chronic pulmonary disease	1
Connective tissue disease	1
Ulcer disease	1
Mild liver disease	1
Diabetes (without complications)	1
Diabetes with end-organ damage	2
Hemiplegia	2
Moderate or severe renal disease	2
2nd solid tumor (nonmetastatic)	2
Leukemia	2
Lymphoma, multiple myeloma	2
Moderate or severe liver disease	3
2nd metastatic solid tumor	6
AIDS	6

Nineteen conditions are assigned to a degree of severity and the total score is calculated to prognosticate mortality. The Charlson Comorbidity Index can be age adjusted and also correlates with postoperative complications, length of hospital stay, and progression-free survival in older cancer patients.

early detection of melanoma reduced the incidence of the disease in those younger than 35 years of age [20–22]. Nevertheless, the incidence of melanoma increases with age and the most important trend is among elderly men [21,23]. The death rate in young patients remains stable and starts to decline in those born between 1960 and 1970, whereas in elderly patients it continues to increase globally with a 5-year reduction in disease-free survival for patients above 60 years of age [23–25].

Features of melanoma in the elderly

The main causes for late diagnosis and relatively poor prognosis [21,24,25] of elderly patients with melanoma were examined according to various clinical and pathological features of the disease, as well as age-related changes in immunity, lymphatic drainage, and mental status.

Clinical and dermoscopic patterns

Melanoma in the elderly patients is characterized by relatively more lentigo maligna, which is often diagnosed only when it becomes invasive; nodular and acral-lentiginous melanoma and advanced superficial spreading melanoma [12,24–33].

Lentigo maligna (melanoma In situ)

This typically occurs on sun-exposed areas in elderly patients, although it may appear before the age of 40 years [25,27,28]. It is a slowly evolving macule that may vary in color over time from light to dark brown and black. It grows slowly, horizontally, and, during malignant progression, dark papules and/or nodules, and other clinical markers of invasion [25,27,28], such as regression, which is characterized by white or light-grey areas [28], begin to appear.

Lentigo maligna appears dermoscopically as hyperpigmented follicular openings with an annular-granular pattern. The follicular openings in lentigo maligna melanoma (LMM) are obliterated by a dark homogeneous pattern, and irregular, white, scar-like areas of regression and milky-red areas of neoangiogenesis can be observed [29–32].

Nodular melanoma

In elderly patients, nodular melanoma frequently appears on the head and neck, scalp and back as a rapidly growing,

exophytic nodule. Occasionally pedunculated, nodular melanoma may be variegated in color from reddish-brown to dark brown or blue black [25–28,34]. It may also be amelanotic for which early diagnosis is the exception [26,34].

Recognition of nodular melanoma is difficult and clinical criteria–including the asymmetry–border, irregularity–color, variegation–diameter greater than 6 mm mnemonic– are often unhelpful because of their peculiar characteristics [21,34]. Additional criteria, including elevated, firm, and growing for more than 1 month have been proposed as an educational campaign targeted specifically at the elderly [35].

Dermoscopically, nodular melanoma can appear as milky-red areas, blue-red globules, or areas of regression [29,31]. However, the presence of a homogeneous dark pattern related to intraepidermal or upper dermal pigmentation or a thick melanoma render dermoscopy futile [29–31]. The pigmented periphery can be the result of a pigment network, globules, or pigment dots [29,31,33].

Histotype

Elderly men are usually affected by thick melanoma. Nodular followed by acral-lentiginous melanoma are the most common histotypes associated with advancing age [26–28,34,36–39]. As independent prognostic variables, both of these are associated with decreased survival [40]. Desmoplastic melanoma is also more common in the elderly patients with a higher risk of local recurrence and metastases [41].

Clinical and pathological features

Several studies have showed an almost direct relationship between age and the main prognostic factors such as Breslow thickness, Clark level, ulceration, and regression [37–39,42]. Other studies, however, have not shown any difference between age and the presence of regression in melanoma [38].

Clark level of invasion may vary according to age-related differences in skin thickness, such that melanoma may appear to invade more deeply in the elderly because of their relatively thin skin [43]. However, this has not been confirmed by other studies [36,38,44].

Elderly melanoma patients

Although health educational campaigns have been effective for younger populations, there is a lack of health assistance for the elderly. This deficiency also occurs in countries where screening programs are well established [20,21,45,46]. Clinical trials that have analyzed excision rates between young and older patients have shown a higher incidence of melanoma in the elderly. This was by comparing the ratio of nevi to melanoma excised in both groups [45,46].

Analysis of the American Academy of Dermatology National Skin Cancer Screening Programme showed that elderly males benefit disproportionately from melanoma screening. They represent only 25% of screening patients but constitute 44% of new melanoma cases [47].

The difficulty in identifying a new pigmented lesion in the elderly patients may be related to their ability and physiological reserve but also to certain practicalities, including:

(1) Deteriorating vision, loss of a partner, and development of cutaneous lesions in obscure locations such as the scalp and back [20,21].
(2) The presence of seborrheic keratoses with which melanoma can be easily confused, and a physiological age-related decrease in nevi may reduce the awareness of melanoma risk [21].
(3) There is a significant association between thicker melanoma and fewer nevi and between nodular melanoma and solar keratoses [26,36,48].
(4) Nevi density and actinic keratoses are both risk factors for melanoma but there is no association between the number of keratoses and nevi suggesting different pathways of melanoma predisposition [36,39].
(5) Melanoma is rarely associated with nevi in the elderly, suggesting that malignant progression is because of continuous and cumulative sun damage of melanocytes not within the nevus [48].
(6) Older age is recognized as an independent adverse prognostic factor; whether this is principally related to differences in the inherent biology of the disease for older individuals or poor outcomes are related to declining host defense factors is unclear [49].

The risk of melanoma in young people is related to intense and intermittent sun exposure and severe sunburn, whereas in the elderly the incidence is higher in continuously sun-exposed areas [36,48]:

(1) Immune-system senescence reduces a patient's reaction to infections and cancer; this is further compromised in the elderly [35,39,49–51].
(2) The role of the lymphatic system in the progression of melanoma is undisputed and, as demonstrated for breast cancer [52], it is hypothesized that age-related changes in lymphatic flow and number of lymphatic channels may reduce the sensitivity of sentinel node biopsy (SNB) in the elderly [12]. A reduced number and atrophy of dermal lymphatics may also result in preferential hematogenous spread in the elderly [12].

Staging

Ideal staging criteria for tumors should be simple and capable of differentiating patients with curable disease

from those with disease likely to relapse. Such criteria should also be able to predict the pattern of failure and the most effective therapy for these patients [53]. Currently, however, melanoma staging is imperfect, and modifying it when more discriminating factors are identified will be an enormous challenge [53].

Treatment

The treatment of cutaneous melanoma is multidisciplinary and surgery is a mainstay, regardless of the stage of disease. Currently about 90% of patients with cutaneous melanoma are curable; however, there is no effective therapy for those with distant metastases, and the overall 5-year survival rate in patients with inoperable metastatic disease is 5–10% [28]. Once melanoma is suspected, most patients, including the elderly, require surgery. Depending on the locoregional stage of the disease, this may be a minor procedure under local anesthesia or a major operation under general anesthesia. Regardless of the extent of surgery, however, the general medical condition of each elderly patient must be assessed and a person's alone should not be considered to be a contraindication to surgery [12].

Preoperative assessment

The pre anesthetic and anesthetic care of elderly patients is becoming more challenging, and oncology patients requiring surgery are becoming older. Although anesthesia for elderly patients has become sophisticated, there is no single 'best way' to manage these patients.

There are many factors to consider when anesthetizing elderly patients. A cardiovascular assessment is performed before any procedure using local anesthetic. Sodium bicarbonate may also be added to the local anesthetic to neutralize it for patient comfort.

Preoperative investigations including blood tests, chest radiograph, and electrocardiogram are required of all elderly patients having surgery under general anesthesia. The results are then reviewed by an anesthetist, who may request further investigations if the patient is at cardiovascular or respiratory risk. A thorough patient history will also reveal any medications or medical conditions that may interfere with the anesthetic or surgery.

In the absence of contraindications, standard oncological staging and treatment should be offered to patients, without any compromise because of the their age [12, 54–56].

Surgery

Surgery is the most important treatment for melanoma patients and therefore the quality of the surgery will have an important impact on the course of the disease [12]. The main surgical procedures include definitive excision of primary melanoma, SNB and lymphadenectomy for early melanoma, and radical curative or palliative surgery for advanced melanoma.

Primary melanoma excision in elderly patients

This is generally a minor surgical procedure that can be performed under local anesthesia. Many clinical trials have aimed at obtaining general consensus regarding the extent and timing of surgery. After several retrospective analyses reported conflicting results, the main studies contributing to guidelines for local melanoma excision are the WHO Melanoma Program Trial, the Intergroup Trial and the UK Melanoma Group Study [12,57–62].

These randomized studies aimed to determine an adequate resection margin for primary melanoma and to see whether this could be limited to 1 or 2 cm instead of 3–5 cm as accepted earlier [12]. The UK Melanoma Group Study created ambiguity, as it was the first randomized study to show a significant result favoring wider margins to reduce local recurrence [60]. Nevertheless, the other studies confirmed that a more conservative margin of 1 and 2 cm is as safe as a 3–5 cm margin for primary melanoma [60,62–65]. The UK Melanoma Group Study was dedicated to thick primaries whereas the others focused on thin lesions.

The WHO study investigated resection margins of 1 cm for primary melanoma thinner than 2 mm, whereas the Intergroup Study investigated margins of 2 cm for patients with melanoma 1–4 mm thick. This wider excision may cause more difficulty closing the wound in certain anatomical regions such as the distal limbs or the head and neck [60,62,63].

Suspicious cutaneous lesions are usually first excised with a narrow margin of normal skin. Once the diagnosis of melanoma is confirmed by histopathology, definitive treatment is planned. When indicated, the SNB is performed simultaneously with the wide excision.

Another aspect related to local excision of the primary melanoma is the depth of the wound. Excisional biopsy includes only the superficial subcutaneous tissue, whereas a wide therapeutic excision includes all of the subcutaneous tissue down to the deep fascia. When an SNB is not indicated or precluded by patient comorbidities, a single definitive procedure with a 1-cm margin can be performed, and usually as an outpatient. A preoperative ultrasound of the regional nodes can be performed to determine whether a lymph node biopsy is required at the time of definitive excision of a clinically suspicious primary melanoma [64,66,67].

Sentinel node biopsy in elderly patients

Minimally invasive intraoperative lymphatic mapping and SNB is standard for staging the regional lymph nodes for

early melanoma and is practiced in most institutions to select primary melanoma without clinical, radiological, or histopathological evidence of metastases [12,53]. The revised American Joint Committee on Cancer classification was activated in January 2002 after approximately 2 years of clinical data analysis [68–70]. The Breslow thickness at which the risk of nodal metastases becomes considerable, changed from 0.75 to 1 mm [71–77]. Indications to perform SNB are Breslow thickness 1 mm or greater, Clark level of invasion IV and V, presence of ulceration, and mitotic rate of greater than 1 mm^2 regardless of Breslow thickness [78–81].

Higher mitotic rate is an important predictor of sentinel lymph node positivity in younger patients, but that importance decreased in older patients. Conversely, increasing Breslow depth played a greater role in predicting sentinel lymph node positivity in older patients [78–81].

The major studies investigating the effectiveness of lymphatic mapping/SNB are the Multicenter Selective Lymphadenectomy Trials I and II [82,83] and the Sunbelt Melanoma Trial [84]:

(1) The Multicenter Selective Lymphadenectomy Trial I began in 1994 to determine the therapeutic benefit and accuracy of lymphatic mapping/SNB. In March 2002, it validated the accuracy of this approach as a staging procedure [85] and regarded tumor status of the SN as the most powerful prognostic indicator [86].
(2) The Multicenter Selective Lymphadenectomy Trial II began in 2005 to determine if routine completion lymph node dissection results in a therapeutic benefit for patients with microscopic or molecular involvement of the SLN. Study accrual is ongoing.
(3) The Sunbelt Melanoma Trial is a prospective randomized study examining the therapeutic value of completion lymphadenectomy and/or 1 month of adjuvant interferon-α in patients with molecular involvement of the SN based on reverse transcriptase-PCR evidence of melanoma-related mRNA. Although this trial did not achieve its initial accrual goals because of slow enrolment, it should provide further insight into the therapeutic value of lymphatic mapping/SNB [53]. Although the role of SNB as a staging procedure has been shown, the therapeutic value of this technique is still unknown [53].

There is now ample evidence to show that SN positivity decreases with age, yet it has long been known that mortality from melanoma increases directly with age. Chao *et al.* [87] in their 2004 series of 3076 patients participating in the Sunbelt Melanoma Trial, used groupings similar to those used in the SMU study, although only melanomas ≥ 1.0 mm in thickness were included and patients aged less than 18 years and more than 70 years were excluded, in accordance with the Sunbelt Trial protocol. They found a strong trend in SN negativity with increasing age ($P < 0.0001$), with rates ranging from 23% in their 18- to 30-year age group to 12% in their 61- to 70-year age group. Nevertheless, SNB continues to be the most important prognostic factor in melanoma patients regardless of age [87,88]. There is no evidence that the complication rate after SNB is higher in elderly patient's [89].

A multidisciplinary approach including the surgeon, anesthetist, and nuclear physician is mandatory [73]. The surgeon should discuss each elderly patient with the nuclear physician to ensure the correct site is injected with radiolabeled tracer; the two should then decide whether to perform the surgery under local or general anesthesia. This is important when treating elderly patients with melanoma because SNB under local anesthesia might pose more risk than well-planned general anesthetic, particularly in high-risk patients. The technique of lymphoscintigraphy has been studied extensively [90,91] and all cutaneous sites permit accurate mapping of the lymphatic drainage regardless of the patient's age [12,73].

SNB allows accurate lymphatic staging by minimally invasive surgery [92–97] and lymphoscintigraphy is useful for deciding the most appropriate anesthetic for the procedure. Local anesthesia can be proposed when lymphatic drainage is to only one basin, such as the groin or the axilla. However, if the basin is in the neck or the popliteal fossa, or if multiple basins are involved, general anesthesia is recommended [98].

Lymphoscintigraphy consists of one or two intradermal injections adjacent to the previous biopsy of 0.2/0.3 ml of 10–200 nm ^{99m}Tc-labeled colloid. If this is performed on the same day as the SNB, the minimum required volume of radiolabeled tracer should be used to avoid high background radioactivity and obscure identification of the SN in the basin. Late and static images must be obtained at least 1.5–2 h after injection. If interval lymph nodes between the site of injection and the expected first regional lymph node basin are identified after washout of the lymphatic channels, an ultrasound must also be performed before surgery to verify these SNs. Atypical drainage is usually then also observed during the initial dynamic imaging [73].

To localize all of the SNs from the trunk, and head and neck regions, an anterior–posterior and lateral view must be obtained during lymphoscintigraphy [67,99]. The precise cutaneous projection of the SN is then marked on the patient.

After anesthesia, patent blue dye is injected intradermally adjacent to the previous excision, to facilitate SN identification. This is not universal as there is no difference in SN findings whether the dye is used or not. Its use is particularly recommended in elderly patients as it has been shown that the stained SN is identified more quickly, thereby reducing surgical time significantly [81]. To avoid the risk of permanent tattoo on a visible body-part, the dye should not be used on the head and neck.

The SNB commences approximately 10 min after the dye is injected. The position of the incision can be modified by the surgeon after verifying the topographic projection of radioactivity with the γ probe. However, the incision should always be positioned in the line of a lymph node dissection that may subsequently be necessary. If dye is not obvious once the superficial fascia is opened, the γ-detecting probe should be used immediately to direct the dissection towards the SN [100].

Once the SN has been removed it should be tested for its radioactivity and orientated accordingly. The γ probe is then used to identify any residual radioactivity in the surgical field [12]. After the wide excision of a primary melanoma in proximity to the lymphatic basin, the γ-probe collimator can be used to facilitate localization of the SN.

With the use of the γ- probe-guided technique, the percentage of SN detected reportedly approximates 100% [101–103]. The most important part of SNB is accurate histopathological evaluation of the specimen by a skilled pathologist. Whenever histopathology or immunohistochemistry confirms metastases to the SN, a completion lymphadenectomy should be recommended to the patient.

Radical lymph node dissection

This is the surgical gold standard for melanoma patients with nodal metastases. The basins most frequently involved are the groin, axilla, and neck. Rarely, metastases may be found in the epitrochlear region or in the popliteal fossa. The goal of the surgical oncologist treating melanoma metastatic to locoregional sites is to be as radical as necessary, especially in elderly patients.

Axillary lymphadenectomy involves excision of the three levels of axillary nodes of Berg. The neck dissection includes nodal levels I–V and a superficial parotidectomy should also be performed if the primary melanoma is located between the zygoma and the mastoid. The groin dissection includes the superficial and deep inguinal nodes and the ilio-obturator nodes [104–111]. Some authors have modified the neck dissection, preserving the submental and submandibular nodes (level I) for nodal metastases in the posterior triangle (level V). Similarly, some surgeons preserve the ilio-obturator nodes, because dissection of pelvic metastases does not change the patient's prognosis and may increase morbidity in the elderly. This less radical approach should not be to reduce lymphoedema of the lower limb as the pelvic dissection does not change its incidence [112]. Bulky pelvic metastases, however, will worsen the patient's quality of life. The pelvic-sparing dissection may be indicated in those elderly patients at increased risk after a prolonged procedure and longer postoperative immobilization [12].

Surgical treatment of advanced-stage melanoma in elderly patients

Annually approximately 7500 patients are diagnosed with metastatic melanoma in the United States. This approximates the annual number of deaths from this disease, showing the lack of progress in the treatment of stage IV melanoma over several decades [113]. Although the average life expectancy is less than 1 year for advanced-stage melanoma, some medical and surgical treatments are available.

Currently, no therapeutic agent is known to prolong survival in patients with metastatic melanoma. Dacarbazine is the only US Food and Drug Administration (FDA) approved chemotherapy, but it is effective in less than 10% of patients. On the basis on phase II data, interleukin-2 received FDA approval for patients with metastatic melanoma with significant responses observed in approximately 1–2% of patients. It is, however, associated with high toxicity and cost [114].

Various treatments for progressive locoregional disease have included multiple surgical excisions, radiotherapy, cryotherapy, laser ablation, radiofrequency ablation, intralesional chemotherapy, intralesional immunotherapy with bacillus Calmette–Guérin (BCG), isolated limb perfusion (ILP) or isolated limb infusion, and, rarely, amputation [115–126].

Solitary or occasional metastatic cutaneous or subcutaneous nodules can be easily excised locally. Similar numbers of visceral metastases may also be resected.

ILP deserves special mention as a treatment for elderly patients with in-transit metastases of the extremities [119–125]. ILP is a major operation in which the main artery and vein of the limb are catheterized to allow extracorporeal isolated hyperthermic limb perfusion for 60–90 min with melphalan alone or in combination with tumor necrosis factor-α. ILP with melphalan alone can be proposed for those elderly patients with unresectable in-transit metastases smaller than 0.5 cm diameter, whereas ILP with melphalan and tumor necrosis factor-α is indicated for bulky metastatic disease and for recurrent

disease after previous ILP with melphalan alone [127–130]. Although a long-term, limb-specific, disease-free survival of 25% has been shown in this subgroup, the principal goal of this approach is limb salvage. This has been as high as 70–80% in a series of patients otherwise requiring limb amputation. Age should not be a contraindication and elderly patients can undergo ILP safely and receive the same benefit as younger patients [127,131–133]. Careful patient selection is necessary as this procedure can be complicated by major intraoperative blood loss and hemodynamic instability.

Electrochemotherapy (ECT) is a novel procedure that now provides a relatively noninvasive and well-tolerated treatment option for patients with symptomatic cutaneous and subcutaneous melanoma metastases. ECT can be performed as an outpatient or short-stay procedure and uses brief, high-intensity, pulsed electrical current to produce a transient increase in cell-wall permeability. This potentiates uptake of chemotherapeutic drugs into cells, and possibly vaccines and genes in the future [115,116]. Bleomycin used for ECT may be administered intravenously or intralesionally depending on the number and size of the metastases. Although palliative, this simple and repeatable procedure has a high response rate and provides a marked improvement in the patients' quality of life, particularly in those with disease that is otherwise difficult to treat.

Future prospectives

Currently, the best chance of influencing the behavior of melanoma is early detection [53,114]. Adjuvant therapy is associated with significant toxicity and unclear efficacy, and this limits its use in the elderly where the patients' quality of life is paramount.

Conclusion

Melanoma in the elderly patients presents particular diagnostic and therapeutic difficulties. The difficulty in diagnosing melanoma in the elderly is partly because of the relatively high percentage of LMM and nodular melanoma in this age group. LMM gradually increases in size and can easily be confused with benign lesions, whereas nodular melanoma is rarely diagnosed clinically. As a result of these peculiar aspects, a skilled onco-dermatologist will play an important role in diagnosis.

The delay with which elderly patients present with a gradually changing skin lesion also requires consideration. If the patient does not present early, the lesions will continue to grow until they become symptomatic. Public educational campaigns aimed at the elderly and clinical training of general practitioners in cutaneous neoplasms are mandatory. Early detection remains the most important step in attempting to reduce mortality from melanoma.

Delayed presentation and difficulty in diagnosing melanoma in elderly patients may also be related to their deteriorating vision, increased isolation because of eventual loss of a partner, development of skin lesions in obscure locations, and their reduced awareness of melanoma risk.

Older age is recognized as an independent adverse prognostic factor; whether this is principally related to differences in the inherent biology of the disease for older individuals or poor outcomes are related to declining host defense factors is unclear.

Surgery remains the gold standard treatment of melanoma, as there has been insufficient progress in alternative therapies over the last decade. Suboptimal treatment of elderly patients with melanoma because of their comorbidities and disabilities, and a reluctance to include them in clinical trials, is unacceptable.

Several studies have shown that absolute age is not a risk factor for perioperative morbidity and mortality, and after careful medical assessment each elderly patient should be treated following the same oncological guidelines as used to treat younger patients. We also recommend that patients enroll in clinical trials regardless of their advancing age, provided they have satisfied the remaining inclusion criteria.

Melanoma is an aggressive disease at any age, despite the common misconception that tumor biology in the elderly is less aggressive, and the risk of local recurrence and metastases is too high to consider treating elderly patients more conservatively than younger patients.

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