1. Introduction

Malignant melanoma is the primary cause of mortality related to skin conditions and ranks as the fifth most prevalent form of cancer. The documented prevalence of melanoma has increased twofold in the last three decades. The United States recorded over 96,480 new cases of melanoma in 2018, with men accounting for around 60% of these instances. In 2018, melanoma was responsible for around 7230 fatalities, with two-thirds of the deaths occurring in men. Around 25% of melanoma instances manifest before the age of 40. The enhanced identification of melanoma at an early stage has resulted in better chances of survival. However, the mortality rate due to melanoma is still on the rise, particularly among males aged 70 years and older. The lifetime incidence of melanoma is 2% among individuals of Caucasian descent and ranges from 0.1% to 0.5% among those of non-Caucasian descent. The purpose of this study is to provide a comprehensive overview of the diagnosis and clinical advancements in malignant melanoma.

General consideration of malignant melanoma

Malignant melanoma is a type of cancer that affects the skin and has distinct features, such as flat or elevated lesions. It should be considered a possibility when there are noticeable changes in the appearance of a pigmented skin lesion. An examination conducted under adequate lighting conditions can reveal a range of colors, such as red, white, black, and blue. The thickness of the tumor is the most crucial determinant of prognosis. Primary malignant melanoma can be categorized into different clinicohistological types, such as lentigo maligna melanoma, superficially spreading malignant melanoma, nodular malignant melanoma, acral-lentiginous melanoma, eye melanoma, and malignant melanoma of the mucous membranes. Determining oncogenic mutations in individuals with advanced melanoma can guide the use of targeted treatment, typically directed towards specific BRAF mutations.
boundaries of lesions typically exhibit irregularities. The thickness of the tumor is the most crucial determinant of prognosis. The ten-year survival rates, based on thickness measured in millimeters, are as follows: for thicknesses less than 1 mm, the survival rate is 95%; for thicknesses between 1 and 2 mm, the survival rate is 80%; and for thicknesses between 2 and 4 mm, the survival rate is 55%. The five-year survival rate is 62% when lymph nodes are affected, and it drops to 16% when there are distant metastases.5–7

**Clinical finding**

Primary malignant melanoma can be categorized into different clinicohistological types, such as lentigo maligna melanoma (occurring on the skin of older individuals who are consistently exposed to sunlight), superficially spreading malignant melanoma (the majority of melanomas arise on intermittently exposed skin), nodular malignant melanoma, acral-lentiginous melanoma (present on the palms, soles, and nail beds), eye melanoma, and malignant melanoma of the mucous membranes. The various clinical subtypes of melanoma seem to possess distinct oncogenic mutations, which could have significant implications for the management of patients with advanced stages of the disease. Less than 30% of melanomas originate from preexisting moles.8,9

The distinguishing characteristics of a pigmented lesion that is thought to be melanoma include an asymmetrical and jagged border where the pigment seems to extend into the adjacent healthy skin, as well as a surface texture that may be uneven, with some areas elevated and others flat (Figure 1). The presence of color variations is significant and serves as a crucial reference point. The ABCDE rule is a helpful mnemonic that stands for asymmetry, border irregularity, color variegation, diameter greater than 6 mm, and evolution.10–12

The primary historical factor that necessitates careful assessment and potential referral is the progression of the mole, which may involve bleeding and ulceration. An atypical mole that exhibits distinct characteristics compared to the patient’s other moles should be given particular attention, as it may indicate the presence of an abnormality. This phenomenon is commonly referred to as the “ugly duckling sign.” An individual with a high mole count faces a statistically higher likelihood of developing melanoma and should undergo a comprehensive skin check by a primary care physician or dermatologist on a yearly basis. This is particularly important if the moles display atypical characteristics.

![Figure 1. Malignant melanoma.](image)

Although superficial spreading melanoma primarily affects individuals with white skin, individuals of other ethnicities are also susceptible to this and other forms of melanoma, particularly acral lentiginous melanoma. The condition manifests as dark, asymmetrical lesions on the palms and soles, as well as new longitudinal stripes on the nails. These stripes are often wide and single, with a dark pigmentation. Typically, the proximal nail fold is also affected. Acral lentiginous melanoma can present challenges in terms
of diagnosis since it may be difficult to identify or may be diagnosed later. This is because benign pigmented lesions on the hands, feet, and nails are common in individuals with darker skin tones, and doctors may be cautious about conducting biopsies in these locations.\textsuperscript{13,14} Medical practitioners should give particular consideration to newly appearing or evolving abnormalities in these regions.

**Treatment**

The initial step in the treatment of melanoma involves surgical removal. Following the histological diagnosis, it is advised to perform a reexcision procedure with margins defined based on the thickness of the tumor.\textsuperscript{13} It is recommended to have surgical margins of 0.5–1 cm for melanoma in situ and 1 cm for lesions that are less than 1 mm thick. Sentinel lymph node biopsy, also known as selective lymphadenectomy, is a highly effective method for determining the stage of intermediate-risk melanoma patients who do not show any signs of swollen lymph nodes. This procedure involves the use of preoperative lymphoscintigraphy and intraoperative lymphatic mapping. It is recommended for all patients with melanoma lesions that are thicker than 1 mm or have high-risk histologic features such as ulceration. Nevertheless, this surgery may not confer a benefit in terms of survival.\textsuperscript{13,15} It is highly suggested to refer patients with intermediate-risk and high-risk melanoma to specialized clinics. Determining oncogenic mutations in individuals with advanced melanoma can guide the use of targeted treatment.

**References**


