

Melanoma: understanding the deadly skin cancer and promoting early detection

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ABSTRACT

Melanoma is a deadly form of skin cancer that arises from the melanocytes, the pigment-producing cells in the skin. It is primarily caused by excessive exposure to ultraviolet (UV) radiation from the sun or artificial sources. Melanoma is the most dangerous skin cancer due to its potential to metastasize to other organs and tissues. Various risk factors, such as fair skin, family history, and multiple atypical moles, increase the likelihood of developing melanoma. Early detection is crucial for favourable outcomes, as melanoma can often be identified through the ABCDE rule - asymmetry, irregular borders, varied colours, larger diameter, and evolving appearance of moles. A biopsy is necessary for definitive diagnosis, after which appropriate treatment can be determined based on the melanoma's stage and location [1-4]. Surgical excision is the primary treatment for localized melanomas, while advanced cases may require immunotherapy, targeted therapy, or radiation therapy. Preventive measures, including sun protection and regular skin self-examination, play a vital role in reducing the incidence and impact of melanoma. Promoting awareness, education, and early detection efforts are essential in the ongoing fight against this lethal form of skin cancer.

Keywords: Melanoma; Skin cancer; Melanocytes; Ultraviolet radiation; Sun exposure

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INTRODUCTION

Melanoma is a type of skin cancer that originates in the melanocytes, the cells responsible for producing melanin, the pigment that gives colour to the skin. While melanoma is less common than other forms of skin cancer, it is the most dangerous due to its potential to spread to other parts of the body. The primary cause of melanoma is excessive exposure to ultraviolet (UV) radiation, primarily from the sun or tanning beds. This article provides a comprehensive overview of melanoma, including its causes, risk factors, signs and symptoms, diagnosis, treatment options, and preventive measures to promote early detection and improve outcomes for patients [5].

Melanoma is a type of skin cancer that develops in the melanocytes, the cells responsible for producing melanin, the pigment that gives colour to the skin. It is one of the most dangerous forms of skin cancer due to its potential to metastasize or spread to other parts of the body. Melanoma is primarily caused by exposure to ultraviolet (UV) radiation, which can come from the sun or artificial sources like tanning beds [6].

Early detection of melanoma is crucial for successful treatment and improved outcomes. The ABCDE rule is a useful guide to identify potentially concerning moles or pigmented areas on the skin: Asymmetry, irregular Borders, varied Colours, larger Diameter, and an Evolving appearance [7].

Individuals with fair skin, a history of sunburns, excessive sun exposure, a family history of melanoma, and numerous atypical moles are at a higher risk of developing this cancer. Regular skin self-examinations and yearly check-ups with a dermatologist can aid in early detection and prompt intervention [8].

If melanoma is suspected, a biopsy is performed to confirm the diagnosis and determine its stage, which helps determine the appropriate treatment plan. Treatment options for melanoma include surgical excision, immunotherapy, targeted therapy, and radiation therapy, depending on the tumour's size, depth, and whether it has spread [9].

Prevention is a key in reducing the risk of melanoma. Sun safety practices such as using sunscreen, wearing protective clothing, seeking shade during peak hours, and avoiding tanning beds are essential. Public awareness campaigns, education on early detection, and encouraging regular skin examinations are vital in combating melanoma and improving overall skin health.

Melanoma research continues to advance, leading to the development of targeted therapies and immunotherapies that offer new hope for patients with advanced disease.

With early detection, effective treatment, and preventive measures, we can strive to reduce the burden of melanoma and protect individuals from the serious consequences of this aggressive skin cancer [10].

Causes and risk factors

The main cause of melanoma is exposure to UV radiation, which damages the DNA in skin cells and leads to the uncontrolled growth of melanocytes. However, some individuals may be more susceptible to developing melanoma due to certain risk factors, including:

- a) **Sun exposure:** Prolonged exposure to the sun, especially during peak hours and without adequate sun protection, increases the risk of melanoma.
- b) **Fair skin:** People with fair skin, light hair, and blue or green eyes are at higher risk because they have less natural protection against UV radiation.
- c) **Family History:** Having a family history of melanoma or other skin cancers raises the risk of developing the disease.
- d) **Multiple moles:** Individuals with a large number of moles, especially atypical or irregular moles, have an increased risk of melanoma.
- e) **Weakened immune system:** Those with weakened immune systems, such as organ transplant recipients or individuals with certain diseases, are at higher risk.

Signs and symptoms:

Melanoma often presents as a new or changing mole or pigmented area on the skin. The ABCDE rule is commonly used to identify suspicious features:

- a) **Asymmetry:** One half of the mole does not match the other half.
- b) **Border:** The edges of the mole are irregular, blurred, or notched.
- c) **Colour:** The mole has varied colours, such as different shades of brown, black, red, blue, or white.
- d) **Diameter:** The mole is larger than 6mm (about the size of a pencil eraser), although melanomas can be smaller.

e) **Evolution:** The mole is changing in size, shape, colour, or elevation.

Diagnosis: If melanoma is suspected, a dermatologist or healthcare professional will perform a skin examination and may conduct a biopsy to remove a portion or the entire mole for laboratory analysis. This is the definitive way to diagnose melanoma and determine its type and stage.

Treatment options: The treatment approach for melanoma depends on its stage and location. Early-stage melanomas may be treated with surgery alone; while more advanced cases may require additional therapies:

- a) **Surgery:** Surgical excision is the primary treatment for early-stage melanoma, removing the tumour and a margin of healthy tissue surrounding it.
- b) **Immunotherapy:** These treatments boost the body's immune system to recognize and attack cancer cells.
- c) **Targeted therapy:** Targeted drugs specifically aim at specific genetic mutations in melanoma cells.
- d) **Radiation therapy:** High-energy beams are used to kill cancer cells or reduce tumour size.

Prevention and early detection: Preventing melanoma involves practicing sun safety, such as using sunscreen with high SPF, wearing protective clothing, and seeking shade during peak sun hours. Regular skin self-exams and yearly dermatology check-ups are crucial for early detection and prompt treatment.

CONCLUSION

Melanoma is a serious and potentially fatal form of skin cancer, but with increased awareness, early detection, and timely treatment, its prognosis can significantly improve. Understanding the risk factors, practicing sun safety, and being vigilant about changes in moles are essential in preventing melanoma or catching it in its early stages. By promoting awareness and encouraging regular skin screenings, we can work together to combat melanoma and reduce its impact on public health.

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