This year, more than one million Americans will be diagnosed with skin cancer, the most pervasive of all types of cancer.¹ Current estimates indicate that approximately one in five Americans will develop some type of skin cancer in their lifetime.² Of the three major types of skin cancer, basal cell carcinoma (BCC) and squamous cell carcinoma (SCC) are the most common, and are generally easily treated, particularly when detected early. Melanoma, while less common, is more serious, but still has a high five-year survival rate. All three types are highly treatable when discovered in the early stages of the disease. Several viable treatment options are available, though prevention and education are perhaps most important.

The Skin

The skin, the human body’s largest organ, is comprised of three layers, the epidermis, dermis, and subcutaneous fat. The epidermis is the outermost layer of the skin and consists of the stratum corneum, several layers of squamous cells, and the basal layer. Typically, healthy new cells emerge from the underlying basal layer, pushing older cells toward the stratum corneum where they are eventually sloughed off. This constant renewal process is controlled by DNA in the skin cells, but when the DNA is damaged, the renewal instructions are altered. As a result, the renewal process can malfunction, causing abnormal cell growth, which can develop into cancerous lesions or tumors.³

The primary cause of damage to the DNA in skin cells is caused by ultraviolet (UV) radiation found in natural sunlight and in commercial tanning beds. The sun produces two types of UV light, UVA and UVB, both of which can be minimized effectively with proper sunscreen and protective clothing. At one time, scientists believed that only the UVB light caused harmful changes to skin cell DNA. While UVB rays are primarily responsible for sunburn and for cellular damage in the basal and squamous layers of the skin, we now know that UVA also contributes to skin cancer. UVA rays penetrate the skin more deeply than UVB, causing damage to the melanocytes and weakening the immune system. Tanning beds deliver high doses of UVA light, making them especially dangerous. UVA exposure increases...
the risk of developing melanoma, while UVB is often responsible for basal cell and squamous cell cancers.

Exposure to UV radiation does not explain all skin cancers, particularly those that develop on areas of the body not exposed to sunlight. Environmental exposure to radiation or toxic chemicals can lead to skin cancer. Heredity also appears to play a role, as risk is increased by genetic links.

**Actinic Keratosis**

Precancerous lesions such as actinic keratosis (AK) often preceed skin cancer. AK appears as rough, scaly, brown or dark pink patches on the skin. They are most commonly found on the face, ears, forearms, and hands. The risk of developing AK is highest among fair-skinned people whose skin has been damaged by the sun. AK can develop into squamous cell carcinoma, but early detection and treatment can stop its progression.

Actinic keratosis can be treated with cryosurgery, laser therapy, dermabrasion, chemical peeling, curettage, or a number of topical treatments. Topical preparations commonly used in the treatment of AK include:

- Jessner’s solution
- Trichloroacetic acid solution (various strengths)
- Alpha-hydroxy acid preparations
- Tretinoin topical cream or gel
- Phenol (various strengths)

**Basal Cell Carcinoma**

BCC is the most common type of skin cancer, accounting for approximately 75% of skin cancer diagnoses. BCC appears frequently on the head, neck, and hands. The lesions appear as small, flesh-colored bumps or nodules with a red, pink, or white color. BCC grows slowly and rarely metastasizes, though it can cause considerable local damage to the skin and nerves. When detected early, BCC is highly curable.

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**Squamous Cell Carcinoma**

SCC accounts for approximately 15% of skin cancer diagnoses. SCC lesions are usually found on the ears, face, lips, and mouth and appear as red, scaly bumps or patches. SCC can develop into large masses and become invasive. Unlike BCC, SCC can metastasize and may even be fatal if left untreated.

**Melanoma**

Melanoma is the most deadly of all skin cancers and accounts for approximately 5% of all skin cancer cases. It can occur anywhere on the body, although it is most commonly found in the upper back, legs, head, and neck. Melanoma begins to develop in the melanocytes, the skin cells which produce melanin, a dark protective pigment which causes the skin to tan. Since melanoma cells often continue to produce melanin, the cancerous lesions appear in mixed shades of brown, tan, and black, though they may also appear in shades of red or white.

Melanoma is curable if found early and treated promptly. Left untreated, it metastasizes and is often fatal. It is important to counsel patients on the importance of examining moles and pigmented areas of the skin for changes, as this is a common warning sign. Any changes should be promptly checked by a dermatologist.

**Prevention**

Prevention is the best method of avoiding skin cancer. Guarding the skin from the known causes of skin cancer is essential. Since over-exposure to UV light (from the sun or tanning beds) that results in sunburn and blistering is the main cause of skin cancer, good preventive measures include using an appropriate sunscreen, covering the skin during “danger” times of the day, and avoiding tanning beds. The following precautions are common sense preventive measures:

- Seek shade when appropriate, remembering that UV rays are the most intense between 10:00 a.m. and 4:00 p.m.
- Wear light-colored, tightly woven protective clothing such as long-sleeved shirts and pants, and gear such as a wide-brimmed hat and sunglasses.
- Apply a broad-spectrum sunscreen that protects against both the UVA and UVB rays, with an SPF of at least 15. Remember to cover the lips and ears.
- Reapply sunscreen every 2 hours when outdoors, even on cloudy days.
- Use of sun protection and education about skin damage avoidance should begin early in childhood. Children younger than 6 months should not be exposed to the sun for prolonged periods, but if it is impossible to avoid the sun, then a sunscreen should always be applied. The use of sunscreen should always be a part of a program for sun avoidance.

**Conclusion**

Skin cancer is the most prevalent of all types of cancer, and while the statistics are daunting, some of the news is positive. Skin cancer is largely preventable and is easily treated when diagnosed in its early stages. The range of treatment options allows for individualized treatment, and the five-year survival rates for BCC, SCC, and melanoma exceed 90 percent.

**References**

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