OASIS DERMATOLOGY GROUP

Ph: (956) 971 - 0404
www.oasisderm.com

Actinic Keratosis

Actinic Keratosis (AK), also known as solar keratosis, sun spots, or precancerous spots, is a common skin condition characterized by the formation of scaly or crusty bumps on the skin. These lesions vary in size from as small as a pinhead to over an inch in diameter and can appear in a range of colors including light or dark tan, pink, red, or flesh-colored.

AKs commonly develop in areas of the skin exposed to ultraviolet (UV) radiation, such as the face, ears, neck, bald scalp, backs of the hands, and forearms, and are typically associated with chronic sun exposure. The lesions are often recognized more readily by palpation due to their dry, rough texture, which may resemble a horn-like scale. While AKs are generally asymptomatic, they may occasionally cause a pricking or tender sensation, particularly after sun exposure.

Pathophysiology and Risk Factors

AKs are considered precursors to squamous cell carcinoma (SCC), one of the most common forms of skin cancer, and represent an early step in the carcinogenic process. UV radiation is the primary etiological factor, causing DNA damage in skin cells and triggering the formation of abnormal keratinocytes. In fact, it is estimated that 10 to 15% of active AK lesions will progress to SCC if left untreated, although SCCs are usually non-lethal if detected and treated early. In some cases, actinic cheilitis, a particularly aggressive form of AK that affects the lips, may evolve into invasive squamous cell carcinoma, with up to 20% of these cancers metastasizing to other parts of the body.

Sun damage, primarily resulting from lifetime UV exposure, is the dominant risk factor for the development of AKs. Cumulative exposure over a person's lifetime, particularly before the age of 18, contributes significantly to the risk of developing AKs. Environmental factors such as reflective surfaces (e.g., sand, snow), cloud cover, and the depletion of the ozone layer further exacerbate exposure to UV radiation, increasing the incidence of these lesions. Fair-skinned individuals, those with blonde or red hair, and individuals with blue, green, or gray eyes are at particularly high risk due to lower levels of protective skin pigment melanin. Additionally, individuals who are immunocompromised, such as those undergoing chemotherapy, those with HIV/AIDS, or those who have undergone organ transplantation, are at an elevated risk of developing AKs.

Diagnosis and Clinical Presentation

AKs typically present as small, rough, scaly patches on sun-exposed areas of the skin. The lesions may appear flat or slightly raised, and their texture often mimics sandpaper or horn-like scales. While AKs are typically benign, inflammation or tenderness in these lesions may raise concern for

potential malignant transformation into SCC. Diagnosis is generally clinical, but in some cases, a biopsy may be necessary to exclude the possibility of SCC or other malignancies.

Dermatoscopic examination may also aid in identifying subtle features suggestive of AKs or their transformation into SCC.

Treatment

Although many AKs do not progress to cancer, their treatment is essential to prevent malignant transformation. Treatment decisions are based on the lesion size, location, and the number of affected areas, as well as the patient's overall health and risk factors. Several treatment modalities are available for AKs, each with varying degrees of effectiveness.

- ***Cryotherapy***, or cryosurgery, is one of the most common treatments for AKs. This procedure involves the application of liquid nitrogen to freeze and destroy abnormal cells. Cryotherapy does not require local anesthesia and is typically well tolerated, although it can result in hypopigmentation in the treated area, particularly with prolonged freezing.
- ***Curettage and Electrocautery:*** Curettage involves scraping the lesion off the skin with a sharp instrument, often combined with electrocautery to control any resulting bleeding. This method allows for histopathological analysis, which is useful for confirming malignancy.
- ***Shave excision*** involves using a scalpel to remove the lesion at the surface level. This technique is often employed for raised lesions and allows for histological evaluation .
- ***Topical treatments*** are useful for multiple or extensive lesions.
    - ***Imiquimod***, an immune-modulating cream, is one of the most recent treatments for AKs. It stimulates the immune system to recognize and eliminate abnormal cells, with twice-weekly application for 6 to 12 weeks being typical.
    - Another effective topical treatment is ***5-fluorouracil*** (5-FU), a chemotherapeutic agent that selectively targets precancerous cells. This treatment causes localized skin irritation and inflammation, and is typically applied daily for 2 to 4 weeks.
    - Additionally, ***Solaraze gel,*** which contains diclofenac sodium, is a non-steroidal anti-inflammatory medication that has been shown to be effective in treating AKs, with twice-daily application for up to 90 days.
- ***Chemical peels***, such as those utilizing trichloroacetic acid, are used to exfoliate the skin and remove the damaged outer layers, promoting the growth of healthier skin underneath.

Prevention and Prognosis

Prevention of AKs relies primarily on avoiding excessive sun exposure, especially during the first 18 years of life. Wearing broad-spectrum sunscreen, protective clothing, and avoiding tanning beds are essential strategies for reducing risk. Regular follow-up with a dermatologist is necessary for

individuals with multiple AKs, as they remain at an increased risk for developing skin cancer, including squamous cell carcinoma and melanoma.

Conclusion

While actinic keratosis is a common and largely benign condition, it serves as a significant precursor to skin cancer, particularly squamous cell carcinoma. Early recognition, treatment, and prevention are crucial for reducing the risk of malignancy and ensuring the best possible outcomes for affected individuals.

References

- Laddha, S. D., Verma, R. L., & Singh, G. (2019). Actinic keratosis: A review of clinical presentation, pathophysiology, and treatment options. Indian Journal of Dermatology, 64(1), 6-11. https://doi.org/10.4103/ijd.ijd_308_18
- Nakamura, S., Kohno, T., & Tanaka, T. (2018). Clinical management of actinic keratosis: Current therapeutic options. Journal of Dermatological Treatment, 29(5), 459-466. https://doi.org/10.1080/09546634.2018.1478597
- Wilkinson, D. S., Williams, H. C., & McNeill, C. A. (2017). Actinic keratosis: Pathogenesis and management. Clinical Dermatology, 35(4), 321-328. https://doi.org/10.1016/j.clindermatol.2017.02.004