

# Solar Keratoses: Markers of Basal Cell Carcinoma Risk and Regression Rates

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## Description

Solar keratoses are a significant risk factor for basal cell and squamous cell carcinomas, posing a growing public health concern among white populations. Despite this, the natural progression of solar keratoses remains poorly understood. The prevalence of solar keratosis rises with age in both genders. Moreover, individuals who already have solar keratosis are more than seven times as likely to develop more within the following months compared to those who don't. These findings highlight the dynamic nature of solar keratosis within communities, indicating frequent turnover. Additionally, it suggests that a minority of susceptible individuals bear the brunt of solar keratosis burden within the community. Actinic Keratoses (AKs) serve as precursors to SCC, commonly encountered in dermatology. They manifest on sun-exposed areas like the head, neck, trunk and limbs, often appearing as erythematous scaling macules or papules, sometimes with hyperkeratotic scales or cutaneous horns. Histopathologically, AKs show mild dysplasia in the epidermis. Their pathogenesis mirrors that of SCC.

## Actinic keratosis

In the general population, the progression of AK to invasive SCC occurs at a rate of 0.075% to 0.096% per lesion per year, potentially higher in Organ Transplant Recipients (OTRs) due to heightened actinic burden. OTRs frequently face a significant burden of AKs, particularly on the scalp, posing challenges in differentiation from SCC and treatment planning. Cryotherapy remains a primary treatment for isolated AKs, though impractical for OTRs with multiple lesions, especially on the scalp, where field treatment with topical therapy is recommended. Options include 5-fluorouracil cream, imiquimod and photodynamic therapy, with curettage possibly necessary for hyperkeratotic lesions. Sun protection is crucial in management. Distinguishing an actinic keratosis from other epidermal tumors is crucial. Bowen's disease, an *in situ* squamous cell carcinoma, presents as a larger plaque with well-defined margins unlike the margins of an actinic keratosis.

Hypertrophic or indurated actinic keratosis poses a challenge in differentiation from squamous cell carcinoma, necessitating biopsy. Additionally, superficial basal cell carcinoma, resembling

Bowen's disease clinically, can occasionally be mistaken for actinic keratosis. Basal cells actively engage in the inflammatory response by enhancing the expression of receptors for migratory inflammatory cells and lymphocytes. In humans, basal cells elevate the levels of intercellular adhesion molecule. Moreover, these cells have the capability to increase the expression of IgE receptors, indicating their potential involvement in allergic responses within the airway. Interestingly, the basal cell layer of human bronchial epithelium expresses a distinctive cell adhesion molecule known as lymphocyte endothelial-epithelial cell adhesion molecule. This molecule plays a crucial role in mediating lymphocyte adhesion to both epithelial and endothelial tissues.

## Basal cell adenomas

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While a cribriform pattern is minimal in basal cell adenoma, infiltration and perineural invasion are notably absent. Basal cell adenocarcinoma is further differentiated by infiltration into adjacent tissues and often an increased mitotic rate. The progression into malignant peripheral nerve sheath tumors from benign neurofibromas is a rare occurrence, typically observed in individuals with neurofibromatosis type 1. Signs indicating malignant transformation include rapid expansion of an existing lesion, local invasion, destruction of nearby bone tissue, or the presence of pleural effusion. Imaging studies may reveal significant growth, alterations in enhancement patterns, and decreased diffusivity on diffusion-weighted imaging, all suggestive of malignancy. Elevated FDG uptake in PET scans, especially with a maximum standard uptake value (SUV) exceeding 4, raises further concerns regarding malignant

transformation. Surgical excision is the primary treatment for malignant peripheral nerve sheath tumors, but recurrence rates are high, and the prognosis remains unfavorable adenoid cystic carcinoma and basal cell adenocarcinoma.

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