A Case report of Actinic keratosis

**Abstract**

A 94-year-old woman came to the clinic because of itching and pain on the scalp and back, but it was not a typical dermatitis. It is a skin precancerous lesion caused by skin keratinization that may develop into cancer. Primary physicians should be alert to this skin disease. Actinic keratosis is an early skin lesion of squamous cell cancer caused by irradiating ultraviolet rays from the sun and it is also one of the most common skin cancers in humans. Squamous cell carcinoma of the skin is usually present in the basal layer of epidermis as early as adolescence. Therefore, it is necessary to avoid excessive sun exposure at young age to appropriately prevent actinic keratosis of the skin. Especially for the first-line physicians who practice medicines in rural and fishing villages to discover skin lesions early and provide treatment or refer them to specialist for further therapy. Primary physicians can educate these villagers how to prevent the disease becoming to skin cancer and are able to teach them how to regularly follow up on the progress of skin lesions related to actinic keratosis.

**Keywords**: Pre-cancerous squamous cell lesion; Actinic keratosis; Seborrheic keratosis; Ultraviolet radiation; Squamous cell carcinoma in situ.

**Case**

A 94 years old woman, who was suffering from hypertension and osteoporosis (T-score: -3.8), taking medication regularly (Fosamax 1# po once weekly). The patient was a housewife in the past and had not been exposed to too much sunlight. With the increase of age, except for a slight increase in blood lipids and osteoporotic lumbar fractures, she has no other diseases. Although the patient does not have multiple systemic chronic diseases, but she had been infected with herpes zoster virus. Therefore, the patient may have lower immunity than normal people. Recently, due to a lichenified skin lesion on the head and back, she seek medical attention because the lesions were itchy and painful. The skin lesions have been found for 2 years, and skin biopsy have been done in other medical centers. Although there are many locations of lesions, there is only one location that is mainly painful. The size of the lesion is about 2x3 cm2. Before she came to the OPD, the lesion was painful, so the patient went to the dermatology department for medical treatment. Although the dermatology department completely removed the lesion, and the pathology report showed no malignant cells, she still felt itchy or painful afterwards, so she came to our hospital for secondary opinion (figure 1). The patient's own liver function and renal function are normal, and the thyroid function is also normal. In the past she had benign fibrous hyperplasia in the right breast which had excised locally with normal CA125 and CA153. Since the patient had visited many dermatology clinics, the urea prescribed by the doctors with steroids or moisturizing had not improved, so her family took her to seek the advice of other family physicians. The skin lesion is as figure 1. Because the patient's skin lesions will be painful; therefore, clinicians suspect the possibility of skin malignancy, so asked the plastic surgeon to do a skin biopsy. The pathological section report confirmed squamous cell precancerous lesions. The result is that the patients received skin lesion excision and suture, then OPD follow up regularly.

**Clinical Features and Prognosis of actinic keratosis**

Early actinic keratosis is asymptomatic and painless, rough, peeling, unevenly pigmented plaques with redness, capillary dilation, and superficial skin ulcerations are common. There are different types of skin lesions in actinic keratosis, and the typical features are keratinization, roughness, abnormal desquamation and scaly plaques on the skin surface, and the location is often exposed to the sun. Actinic Keratosis lesions seen by the naked eye may resemble keratosis or lichenification; but under a dermoscopic examination, it will be found that the epidermis of the lesions is rough and the edges are irregular, and skin flakes will fall off when scratched hard. Due to the diverse clinical appearance, the patients are also often manifests with seborrheic keratosis, which are commonly known as senile plaques, as it occurs in elderly patients with prolonged sun exposure. Sometimes, the lesion may even show as squamous cell carcinoma of the skin. Skin biopsy is currently the only gold standard of diagnosis. However, biopsy, by definition, is still an invasive procedure and given the multiplicity of the lesions, it is impossible to slice every lesion. Invasive squamous cell carcinoma can be difficult to diagnose by dermoscopy alone. Typical erythematous actinic keratosis, as seen under the dermatoscope, has the characteristic strawberry-red network structure with detail of surface scales and bulls-eye lesion. Other forms of actinic keratosis, such as hyperplastic keratosis, are more difficult to diagnose with the dermatoscope. Thus, even with the use of non-invasive instrument, it is recommended to conduct pathological examination of skin slices in case of actinic keratosis (Figure 2). Actinic keratosis is more common in the face, where sunlight exposure is frequent. Its typical clinical features are lichenification and observed with rough, irregular, and ill-defined erythema or rash with some scales and scabs on the surface. Doctors can use dermoscopy or a skin slice through the lesion to diagnose actinic keratosis. General physicians can rule out malignant skin diseases through history taking and physical examination. Early referral to a dermatologist is recommended if the lesions are irregular or unresponsive to skin ointment therapy. The clinical significance of actinic keratosis is that the earliest sign of skin squamous cell carcinoma in situ visible to the naked eye. Approximately 10% of actinic keratosis will progress to squamous cell carcinoma of the skin, and 60% of squamous cell carcinoma of the skin is originated from its previous state of actinic keratosis. Moreover, 97% of skin squamous cell carcinoma at the site of sun exposure will continue to develop more actinic keratosis around it. When the skin shows actinic keratosis, it is the sign of carcinogenesis, as it has changed from a potential lesion into a clinical certainty, and if left untreated, it will progress to fatal condition of squamous cell carcinoma. At this time, the exposed skin will have accumulated many potential skin cancer stem cells, which will eventually develop into clinically observable skin cancer in the future. Without treatment, the cancer cells will proliferate. Thus, early diagnosis and treatment by clearing the potential surrounding lesions, as well as routine follow-up on the disease, are extremely important. Actinic keratosis is an often seen pre-cancerous squamous cell lesion clinically. Actinic keratosis is a common early precancerous skin lesion in clinical practice which often occurs in the face, ears, scalp, arms and other sun-exposed body parts. Ultraviolet rays from sunlight are a common environmental cause of skin cancer and it is classified as the first category of carcinogens by the International Agency for Research on Cancer (IARC). Therefore, how to differentiate and diagnose actinic keratosis and senile plaque is even more important. Risk factors for actinic keratosis include skin sunburn from ultraviolet light, human papillomavirus infection, exposure to arsenic-containing substances or arsenic in drinking water, chronic skin inflammation, skin light-sensitive disease, and fairer skin tone ethnic group, etc. Actinic keratosis is a skin disease caused by sun exposure, generally on areas exposed to sunlight, such as top of the head, the face, and forearms, which may be less prominent as these have rougher surface. Although the dermatoscopy is a good non-invasive approach, the skin biopsy is still the gold standard for clinically confirmed diagnosis. However, given the role of actinic keratosis in skin cancer, further skin biopsy is necessary if suspected. Actinic keratosis is a multi-stage lesion in which the skin is irradiated by ultraviolet light and becomes cancerous by progressing to squamous cell carcinoma. The ultraviolet- induced process involves the accumulation of genetic mutations over several stages, including initiation stage, promotion stage, progression stage, and metastasis. When these abnormal cells reach a certain quantity, they have formed the earliest detectable skin cancer, which is called actinic keratosis.