# ARSENICAL HYPERKERATOSIS AND BOWEN'S DISEASE
## (A report of two cases)

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**Summary**

An association of arsenical kerotosis and Bowen's disease occurring in 2 patients is presented. Literature is reviewed briefly.

KEY WORDS: Bowen's Disease Arsenic

Bowen's disease is relatively uncommon in the pigmented as compared to the Anglo-Saxon races[1] though isolated reports are available of its occurrence chiefly on the exposed areas, sites of friction or trauma[1]. Till 1930, inorganic arsenic was administered therapeutically for many diseases. At times the arsenic ingestion may be accidental when it is consumed in drinking water, or in disinfectant, sprays, etc.[2,3] Besides the well recognised precancerous arsenical keratosis occuring on the palms and soles, carcinomas of the skin developed independent of keratosis also. Several authors have reported association of Bowen's disease and internal malignancy[1,4,5,6]. However, Anderson et al[7] in a study from Denmark did not find any such correlation. The reports in Indian literature on this subject are relatively scarce[8,9]. We describe two cases for their rarity, multiplicity of manifestations and association with other lesions.

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## Case reports

*Case 1*

A 50 years old businessman presented with asymptomatic hyperkeratotic lesions all over the body of 32 years' duration. He also had non-healing ulcers on right wrist and index finger for 2 years. Swelling in the left thigh, groin and right axilla were present for 8 months. There were no constitutional symptoms. Patient was a known diabetic whose disease was under control. In the past he had taken arsenic injections for some ailment, the nature of which was not clear.

Examination revealed a well built and nourished individual, with no anaemia, cyanosis, or jaundice. Skin showed multiple, irregular, hyperkeratotic, darkly pigmented lesions over a background of diffuse erythema which was present all over the body. The lesions varied from 1 mm to 4 cm in diameter. Similar lesions of a lighter color were present on the palms and soles, varying in size from pinhead to about 2 cm. Three ulcers of about 1.5 cm size were present on the palmar aspects of right index finger, right wrist and back of left hand. The ulcers were indurated and had raised firm margins.

Swelling in the right axilla measured 2.5 cm and was hard, mobile and non-tender. The groin swelling extended to the left thigh, was 10 cm × 13 cm in size, ill-defined and non tender. The mass was hard at the periphery, but soft and cystic in the centre.

Investigations on urine, blood, stool, total and differential serum proteins, serum SGOT, SGPT, electrolytes, bilirubin, calcium, phosphorus, alkaline phosphatase were all within normal limits. Analysis of hair, nail, skin and urine for arsenic gave negative result. Skin biopsies from multiple lesions showed squamous cell carcinoma. Axillary and thigh swellings revealed a histopathology of carcinogenic liposarcoma.

*Case 2*

A 50 years old male agriculturist presented with hyperkeratotic lesions all over the body of 10 years duration. He had focal epileptic seizures for 15 days before admission. There was past history of having taken an indigenous preparation containing arsenic for about 4 days, a week prior to the onset of a severe stomatitis, burning and exfoliation of the skin, which had persisted for about one year. Following this patient noticed pigmented hyperkeratotic lesions gradually appearing on the palms, soles and trunk, for which he had consulted with the dermatologist about six years back and a diagnosis of chronic arsenic toxicity had been made. He was subsequently lost to follow up.

Patient was addicted to alcohol and opium for thirteen years. He was a known diabetic with peripheral neuropathy and had mild hypertension for three years.

On general physical examination, mild anaemia and slight icterus was detected. Liver and spleen were just palpable and non-tender. Cutaneous examination revealed hyperkeratotic, darkly pigmented, warty lesions on the palms, soles and trunk varying in size from pinhead to about 2 cm. Mottling of the entire skin was noticeable with some areas of atrophy and hypopigmentation.

Routine urine, blood, stool, serum SGOT, SGPT, alkaline phosphatase, calcium and phosphorus levels and electrolytes were normal. Hair, nails, blood and urine were negative for arsenic. Skin biopsies from multiple lesions revealed histology of senile keratosis and Bowen's disease (Figs. 1 & 2).

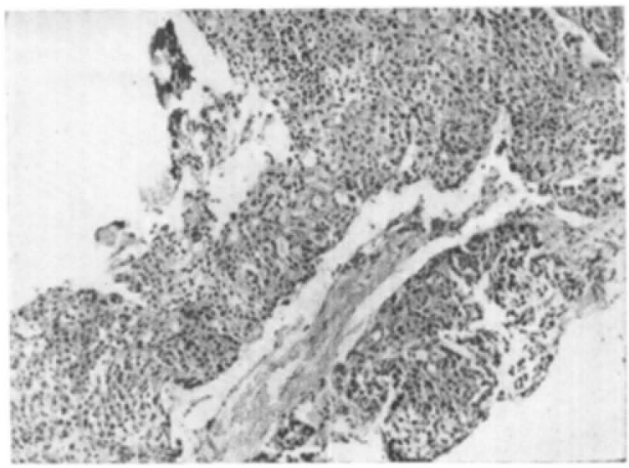

**Fig. 1**
Shows thickend epidermis with disturbed arrangement of cells in stratum malpighi (H & E × 44).

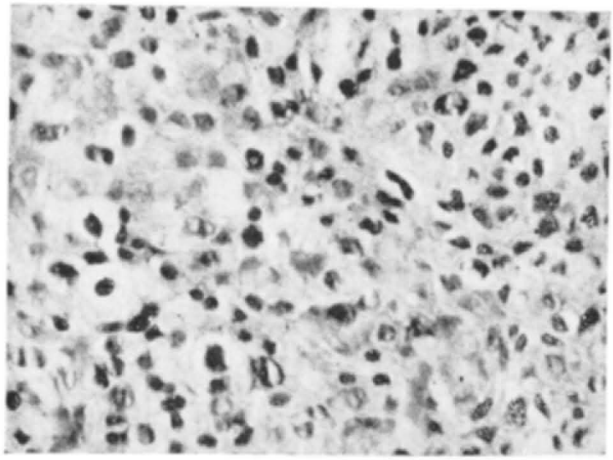

**Fig. 2**
Stratum malpighi shows atypia, large hyperchromatic nuclei, mitotic figures and scattered individual cell keratinization. (H & E × 110)

There was no evidence of internal malignancy on clinical examination and investigation in both patients.

## Discussion

Bowen's disease presents as persistent, progressive, non-elevated, red scaly or crusted plaque which may occur anywhere on the skin or mucosal surfaces. Ulceration is usually a sign of invasion and may not occur for years after appearance of intraepidermal change. The lesions may be widely spread or close to each other becoming confluent with extension. Keratoses with Bowenoid histology mostly occur due to sunlight. Another factor frequently associated with Bowen's disease is trivalent arsenic compounds. However, majority of patients with Bowen's disease are unaware of having been exposed to arsenic. Although less than 5% of a large series of patients with Bowen's disease gave history of arsenic medication, arsenic was found in statistically significant higher proportion of patient's skin than in the controls.

The possible sources of arsenic vary in different localities and countries. Fowler's solution was used in the past for psoriasis, syphilis, epilepsy, chorea and other diseases with a mixture of bromide. In Germany arsenic was used by dermatologists till recently[10]. Arsenic is the basis of Gay's solution, used for asthma in the United States. Many proprietory preparations for eczema, psoriasis and blood tonics contain arsenic. Agricultural workers may be exposed to arsenic salts used in fungicides, weed-killers, sheep dip or in pesticides. Arsenic inhalation may be a hazard in smelting and other industrial processes. In some countries, notably in parts of Argentina and Taiwan, the water supply has been found to be contaminated with arsenic[10]. When there is unequivocal evidence of chronic arsenic intoxication from history or clinical findings, the possible evolution of visceral malignancy especially of the lung should be borne in mind[11].

Both patients here reported gave history of intake of arsenic in the past though no residual traces were found in the keratin, blood and urine. The lesions were possibly initiated by arsenic the process continuing much after detectable amounts of arsenic could be detected. We would tend to agree with Bhutani et al[9] that the association of arsenical hyperkeratosis and Bowen's disease should be occuring more often, since arsenic is used

in fair amounts in the indigenous medicines in this country and till recently even in the modern medicine at some other places.

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