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Histopathology of Skin Lesions in Chronic Arsenic Toxicity—Grading of Changes and Study of Proliferative Markers

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ABSTRACT

Chronic arsenic toxicity (CAT) manifests predominantly as cutaneous lesions in the form of melanosis, keratosis and neoplastic changes. We have studied skin biopsies from 42 patients of CAT. Histological study of H/E stained sections showed - hyperkeratosis in 13, parakeratosis in 13, acanthosis in 12, papillomatosis in 24, elongation of rete ridges in 21, increased basal pigmentation in 27 and dysplastic changes in 8 cases. Squamous cell carcinoma was present in 2, basaloid in 1 and basal cell carcinoma in 1 case. Changes of skin lesions after drug DMSA and DMPS therapy compared to placebo were studied. The result was inconclusive. Proliferative activity of skin lesions in CAT were studied by AgNOR stain to assess the biological behaviour of the lesions. AgNOR score showed - normal control 1.08, benign changes (e.g. Hyperkeratosis, parakeratosis, acanthosis, papillomatosis etc.) without dysplasia - 1.35, mild to moderate dysplasia - 1.735, severe dysplasia - 3.0 and carcinoma - 3.56. Thus, AgNOR score gives some idea on the biological behaviour of CAT lesions. It is suggested that AgNOR staining should be done regularly along with H&E staining for proper assessment of the cases.

Key words : Chronic arsenic toxicity, Melanosis, Keratosis, Neoplasia, AgNOR, Proliferative marker.

INTRODUCTION

Drinking of ground water having arsenic concentration above the maximum permissible limit of 0.05 mg/l has been reported from 8 districts of West Bengal¹. Similar reports are also available from other countries e.g. Bangladesh, Taiwan, Argentina, Chile, Brazil etc. Prolonged exposure to such water results in various clinico-pathological conditions affecting skin and internal organs.

Arsenic is a naturally occurring element, usually in combination with other elements in earth's crust. Inorganic form of arsenic is more toxic over its organic form and present in ground-water. After systemic absorption, it is eliminated mainly through

urine. But on overdose, arsenic accumulates in different body tissues e.g. liver, skin, hair, nail etc. and presents predominantly with cutaneous features² which include:

1. Palmo-plantar/body/mucous membrane melanosis. May be spotted or diffuse.
2. Palmo-plantar keratosis diffuse or nodular.
3. Carcinomatous changes e.g. squamous cell carcinoma, basal cell carcinoma etc.

These changes may progress or regress either spontaneously or on therapeutic interventions. An effective therapeutic agent is yet to be found.

Simple mentioning of presence or

