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Original Article

Clinico-pathological profile of Bowen's disease in skin of colour: Experience from a teaching hospital in north India

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Abstract

Background Bowen's disease (BD) is a squamous cell carcinoma *in situ*, commonly encountered in elderly population with an incidence reported as 15 cases per 100 000 people per year. It is considerably more common in Caucasian skin compared to skin of colour where it has not been studied extensively; the prevalence of BD in skin of colour is now known.

Methods A retrospective study was conducted in the Department of Dermatology, Venereology & Leprology. Hospital records of patients who were seen in the clinic between September 2017 and September 2022 [N=228,194] were screened, records of patient who underwent biopsy were retrieved [N'=1431]; eight patients (*n*=8) with clinical diagnosis of BD, confirmed on histopathology were included in the study.

Results The mean age of patients included was 60.37±6.9 years with equal male and female [M:F=1]. The only risk factor identified was prolonged sun exposure seen in half the patients. The mean duration of the lesions at time of presentation was 3.27±3.21 years. The most common site was trunk (62.5%) followed by lower limb (25%) and head & neck (12.5%). All, except one, had lesion over photo-protected sites. All patients presented with a well-defined plaque; morphological features included pigmentation (75%), scaling (75%), crusting (62.5%), erythema (25%) and ulceration (12.5%). The mean size of the lesion (plaque) at presentation was 5.50±3.02×5.71±2.81 cm^2 Biopsy was characteristic in all cases; features seen were atypia (100%), loss of polarity (100%), acanthosis (87.5%), hyperkeratosis (87.5%), parakeratosis (87.5%), hyperchromatic nucleus (87.5%), pleomorphism (87.5%), dyskeratotic cells (87.5%), mitotic figures (87.5%), "*Windblown appearance*" (62.5%), pigment incontinence (62.5%) and dermal invasion (12.5%). The histological variants seen in our study were classical (62.5%), papillated (25%) and irregular (12.5%).

Conclusion We present here our experience of BD seen at our tertiary centre; there are limited case series from India describing BD. More prospective and population-based studies are needed in the future to determine the burden of the disease among Indians.

Key words
Bowen's disease, Carcinoma *in situ*, Clinico-pathological.

Introduction

John Templeton Bowen, first reported two unusual cases with multiple, erythematous plaques over photo-protected areas under a descriptive title "chronic atypical epithelial proliferation" in 1912.[1] Bowen's disease (BD) is an in-situ squamous cell carcinoma of the epidermis which commonly presents as solitary asymptomatic plaque. The risk of invasive SCC in BD is 3-5%.[2] This disease is commonly encountered in elderly population with an incidence reported as 15 cases per 100 000 people per year, the incidence is higher among males [28 cases vs. 22 cases per 100 000 per

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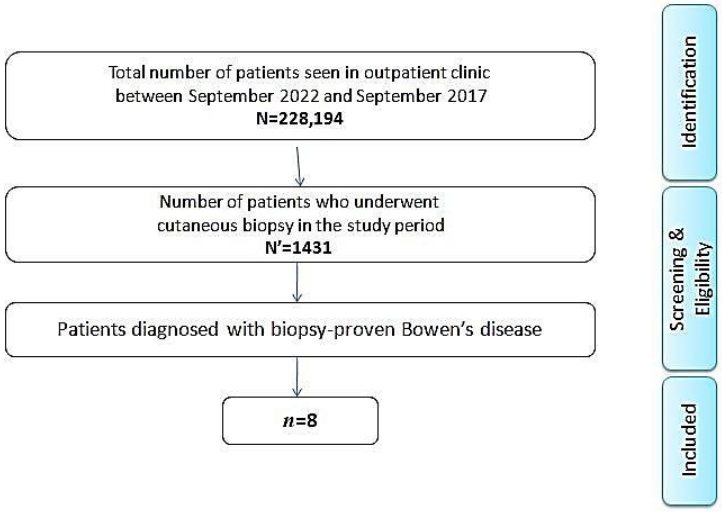

Figure 1 Flow chart of the study design.

year].[2,3] Prevalence of BD in skin of colour is not been studied.

Risk factors for BD include irradiation (ultraviolet irradiation/ radiotherapy/ photo-chemotherapy), immunosuppression (e.g. after organ transplantation, AIDS), carcinogens (e.g. arsenic) as well as viral infections (strong association of anogenital lesions with HPV).[2,5,6] BD typically occurs in individuals >60 years of age and is fairly uncommon among young; immuno-compromised individuals may develop BD at younger age.[3,7] Usually BD presents as a solitary lesion, occasionally lesions may appear at multiple sites in 10-20% cases.[8] BD is more common over photo-exposed skin as compared to photo-protected skin.[7] Due to paucity of data examining BD in skin of colour, this retrospective study was done to study the clinic-pathological features of BD in Indian skin type.

Patients and Methods

A retrospective study was conducted in the Department of Dermatology, Venereology & Leprology. Hospital records of patients who underwent skin biopsy were screened between September 2017 and September 2022 [***N***=228,194], records of patient who underwent biopsy were retrieved [***N'***=1431]; eight patients (*n*=8) with clinical diagnosis of BD, confirmed on histopathology were included in the study (**Figure 1**).

The patient data retrieved was recorded on a pre-designed pro forma to include relevant clinic-demographic details. The histo-pathological findings were reviewed by the pathologist for features and pattern. Data was entered into an Excel spread sheet and analysed.

Results

Demography and risk factors Eight biopsy proved patients of BD (*n*=8) were included, the mean age seen was 60.37±6.9 years with equal number of males and females (M: F=1). The only risk factor identified in the study was prolonged sun exposure, which was seen in 4 cases. No other known risk factor i.e. immuno-suppression, arsenic poisoning, radiotherapy, HPV infection could be identified **(Table 1)**.

Disease characteristics and morphology The mean duration of the lesions at time of presentation was 3.27±3.21 years. The most common site was trunk (62.5%) followed by lower limb (25%) and head and neck (12.5%).

Figure 2

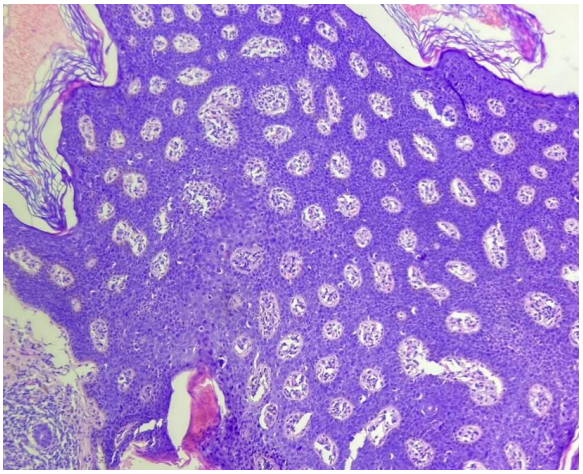

Figure 3

Except for one case, all patients had lesions over photo-protected sites **(Table 1)**. All patients presented with a well-defined plaque; morphological features included pigmentation (75%), scaling (75%), crusting (62.5%), erythema (25%) and ulceration (12.5%) **(Figure 2)**. The mean size of the lesion (plaque) at presentation was 5.50±3.02×5.71±2.81 cm^2 **(Table 1)**.

Histopathology Biopsy was characteristic in all cases; most common feature seen was atypia (100%), loss of polarity(100%) followed by acanthosis (87.5%), hyperkeratosis (87.5%),

Table 1 Clinico-morphological presentation of cases with Bowen's disease

S. No.	*Age/Sex*	*Risk Factors*	*Site*	*Size*	*Morphology*
Case 1	65/M	Sun exposure	Trunk	10×8 cm^2	Pigmented plaque +, scaling+, crusting+
Case 2	60/F	None	Trunk	8×10 cm^2	Pigmented plaque +, scaling+,
Case 3	53/F	None	Trunk	5×4 cm^2	Erythematous plaque +, scaling+, crusting+
Case 4	51/F	None	Lower limb	2×1.5 cm^2	Pigmented plaque +, ulceration +
Case 5	56/F	Sun exposure	Head & neck	3×3 cm^2	Pigmented plaque +, verrucous +
Case 6	60/M	Sun exposure	Lower limb	2×5 cm^2	Pigmented plaque +, scaling+, crusting+
Case 7	70/M	None	Trunk	8×6 cm^2	Pigmented plaque +
Case 8	68/M	Sun exposure	Trunk	6x8 cm^2	Erythematous to pigmented plaque +, scaling+, crusting+

parakeratosis (87.5%), hyperchromatic nucleus (87.5%), pleomorphism (87.5%), dyskeratotic cells (87.5%), mitotic figures (87.5%), "*Windblown appearance*" (62.5%), pigment incontinence (62.5%) and dermal invasion (12.5%) **(Figure 3)**. The histological variants seen in our study were classical (62.5%) which was followed by papillated (25%) and irregular (12.5%) **(Table 2)**.

Table 2 Salient features seen on histopathological examination of cases in the study.

	Case 1	*Case 2*	*Case 3*	*Case 4*	*Case 5*	*Case 6*	*Case 7*	*Case 8*
Atypia	+	+	+	+	+	+	+	+
Loss of polarity	+	+	+	+	+	+	+	+
Acanthosis	-	+	+	+	+	+	+	+
Hyperkeratosis	+	-	+	+	+	+	+	+
Parakeratosis	+	-	+	+	+	+	+	+
Hyperchromasia	+	-	+	+	+	+	+	+
Pleomorphism	+	-	+	+	+	+	+	+
Dyskeratotic cells	+	-	+	+	+	+	+	+
Mitotic figures	+	-	+	+	-	+	+	+
Windblown appearance	+	-	+	+	-	-	+	+
Pigment incontinence	+	-	-	-	+	+	+	+
Dermal invasion	-	-	-	-	+	-	-	-
Variant	Classical	Classical	Classical	Classical	Papillated	Irregular	Classical	Papillated

Discussion

The incidence of BD is higher in Caucasian skin and is rare among Africans/ Blacks.[9] The incidence of BD in Indian population has not been studied. In a study describing 617 cases of BD, 73.5% cases had lesions over photo-exposed sites (head and neck, and hands).[9] Another series of 108 cases; lower limb was the commonest sites (75%), followed by head (13%) and hands(11%).[10] The largest series of 1001 biopsy proven cases of BD reported by Kossard *et al* described head and neck as commonest site (44%) followed by lower limb (29.8%), upper limb (19.8%) and torso (6.5%).[11]

Most of the large data on BD comes from studies in the west describing predominantly Caucasian population. We report our findings with only 8 cases during a five-year period, despite being a tertiary centre with a large catchment area and an average annual footfall of more than 40,000 patients in the Dermatology outpatient clinic. We also had most lesions over photo-protected sites, contrasting with findings by authors in the West. There are only case reports or short case series reported from India, which could be attributable due to under-reporting since there is no data on its prevalence.[12] We propose population-based studies to assess the prevalence of BD; and its true burden among Indians. Another explanation is that patients land up at the doctor's office once the BD progresses to squamous cell

carcinoma, thus with medical intervention, many SCC cases are potentially treatable at a pre-malignant stage.

BD has been described as many variants apart from the classical form; as pigmented, intertriginous, verrucous, hyperkeratotic, atrophic, palmar/ plantar, genital, periungal and subungal types. Nakai *et al*. reported a patient with fissures and scaly palms.[13] Periungual BD may present as a plaque with slight nail deformity whereas sungual forms may present as longitudinal melanonychia.[3,14]

Histopathological variants include acantholytic, atrophic, clear cell, epidermolytic, irregular, orthokeratotic, psoriasiform, pigmented, papillomated, pagetoid, verrucous and hyperkeratotic BD. We could only see classical (62.5%), papillated (25%) and irregular (12.5%) in this study.

BD is an uncommon carcinoma *in situ* among skin of colour, its prevalence in Indian is unknown. More prospective and population-based studies are needed in the future to determine the burden of the disease among Indians. We present here our experience of BD at our tertiary centre from northern India.

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