

HISTOCHEMICAL PROFILE OF VITILIGO

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Fifty untreated vitiligo patients were subjected to histochemical examination using dopa reaction technique. Dopa positive melanocytes were absent in a large majority (82%) of cases. Increase in the number of supra-basal clear cells was observed in 70 percent. Presence of inflammatory infiltrate at dermo-epidermal junction along with basal cell layer-dissolution was seen in 7 cases. Grayish-black, ovoid cells considered to be inactive melanocytes, were seen in the basal layer.

Key words : Vitiligo, Histochemical staining.

Bloch introduced dopa reaction technique for the demonstration of melanin producing cells.¹ Absence or diminution of melanin pigment in the epidermis along with dopa negative melanocytes is a striking histochemical feature in vitiligo.² Presence of inflammatory infiltrate at dermo-epidermal junction is another significant observation.³ Some workers have reported an increase in the number of supra-basal clear cells.⁴ Such cells are believed to be effete melanocytes.²

Materials and Methods

Fifty untreated cases of vitiligo including 6 cases of trichrome vitiligo were studied. Two biopsies, one from the edge of vitiliginous lesion to include a portion of adjacent normal skin/intermediate tan area of trichrome vitiligo and the other from the centre of the lesion were taken. Each specimen was divided into two pieces; one was subjected to routine hematoxylin-eosin stain and the other to dopa reaction technique.⁵ Various histochemical features were then clearly delineated and documented.

Results

H-E stained sections revealed complete absence of melanin pigment in 31 cases, while it was diminished in the remaining 19 sections.

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An increase in the number of supra-basal clear cells was evident in 35 cases. Eight patients showed inflammatory infiltrate comprising of lymphocytes and histiocytes at the dermo-epidermal junction. Seven other sections revealed basal cell layer dissolution with the infiltrate invading the lower portions of the epidermis (Fig. 1).

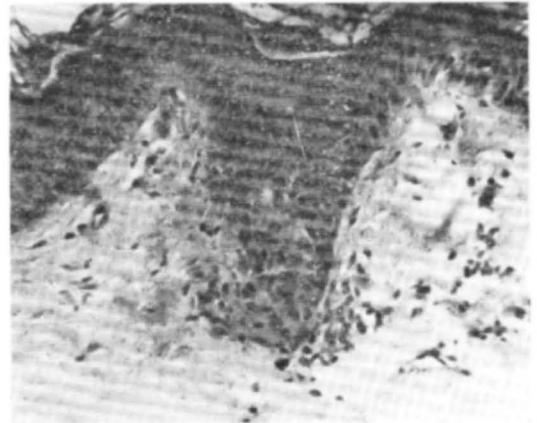


Fig. 1. Inflammatory infiltrate comprising lymphocytes and histiocytes at dermo-epidermal junction, with basal cell layer dissolution (H-E \times 400).

Dopa-treated tissue sections obtained from the centre of vitiliginous lesion revealed complete absence of dopa positive melanocytes and total depletion of melanin pigment in 41 cases. Marked diminution of pigment and a few weakly positive melanocytes were observed in the remaining 9 sections, which included vitiliginous portion of 6 trichrome vitiligo lesions. An

intriguing observation was the presence of homogeneously stained, grayish black, small ovoid cells, devoid of dendrites, in the basal cell layer of 16 patients (Fig. 2).

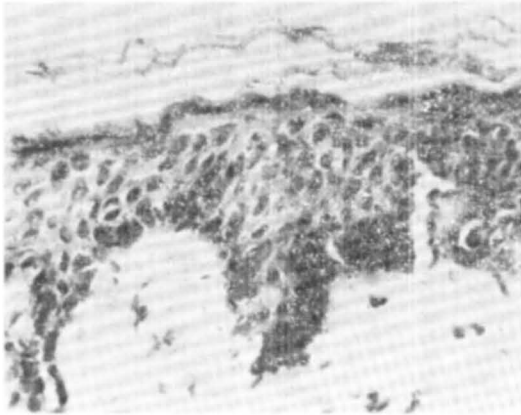


Fig. 2. Grayish-black, homogeneously stained ovoid cells (Dopa $\times 400$).

Specimens from the trichrome vitiligo revealed interesting observations. Melanin pigment in the intermediate tan areas was comparable to adjacent normal skin. However, the number of weakly positive melanocytes and grayish black, ovoid cells were conspicuous in tan areas in all 6 cases.

Five cases of vitiligo had hyperpigmented borders. Increased melanin pigment was observed in all 5 and the number of dopa positive melanocytes was relatively more as compared to the ones having normal pigmented border.

Comments

Marked diminution (38%) or absence of melanin pigment (62%) in the vitiliginous portion of tissue sections was the hallmark of the disease process. Significant increase in the number of supra-basal clear cells was another noteworthy feature. These cells are thought to be effete melanocytes.² However, other workers using adenosine triphosphate activity saw no correlation between these clear cells and melanocytes.⁶ At places inflammatory infiltrate was closely hugging

the dermo-epidermal junction and in fact in 7 cases the infiltrate invaded the basal cell layer causing its dissolution. This observation indicates that some immune mechanism was in operation and lends support to the auto-immune etiopathogenesis of vitiligo.⁷

Dopa technique revealed uniformly negative dopa reaction in a large majority (82%) of cases in specimens obtained from the centre of vitiliginous lesions. Hu et al⁸ opined that melanocytes were still present in the vitiliginous skin but were inactive and thus remained dopa negative. However, ultrastructural studies of long-standing lesions showed complete absence of melanocytes.²

Weakly positive melanocytes were observed in the remaining 9 sections, which included all the 6 cases of trichrome vitiligo. Jarret and Szabo⁹ observed similar changes in their series and coined the term relative type I vitiligo for such cases.

An intriguing feature was the relative increase in the number of grayish black, homogeneously stained, ovoid cells without dendrites in the basal cell layer, both in sections from the centre of vitiliginous as well as from the intermediate tan areas of trichrome vitiligo. These were presumed to be inactive melanocytes.⁸ However, the exact nature, functional significance and their role in the exact patho-biology of vitiligo remains obscure.³

References

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