Immunofluorescence and Immunohistochemistry in Macular Amyloidosis: An Observational Study

Sir,

Macular amyloidosis (MA) is believed to be multifactorial in origin. It usually presents as small 2–3-mm gray-brown or brown, pruritic (82%) or nonpruritic (18%) macules, which gradually join to form symmetric patches with a characteristic rippled/reticulate pattern involving most frequently the inter-scapular area and less frequently the upper arms, chest, and thighs.[1] Its diagnosis is based on its characteristic clinical appearance or on skin biopsy findings. Direct immunofluorescence (DIF) and immunohistochemistry (IHC) using anti-cytokeratin (CK) antibodies have been used in cases of cutaneous amyloidosis.[2,3] We studied the role of DIF and IHC using anti CK5 antibodies in cases of MA.

Fifteen females with clinical and histopathological diagnosis (amyloid deposits in papillary dermis) of MA attending our outpatient dermatology department were included in the study [Figure 1]. Detailed history regarding various factors implicated in the etiology such as friction, sunlight, or any other factors such as cosmetic use, atopy, drugs, and systemic illness was obtained. Examination findings including sites involved and pigmentation pattern were recorded. DIF and IHC using anti-CK5 antibodies were carried out from the skin biopsy sample. Other investigations including hemogram, liver and renal function tests, blood sugar, and thyroid profile were performed. Mean age of the patients was 39.40 ± 8.73 years. Duration of symptoms varied from 6 months to 15 years with a mean duration of 52.80 ± 49 months. Pruritus and cosmetic concern were the main symptoms in 13 patients (86.7%) and cosmetic only in 2 patients (13.3%). Majority of MA patients (46.7%) had upper limb involvement as the first site of onset of pigmentation followed by the back (20%). The histopathology showed presence of amyloid deposits in the papillary dermis in all the cases on routine hematoxylin andeosin (H and E) stain and methylviolet stain. On DIF, immunoglobulin (Ig) M and third component of complement (C3) deposition were found in the papillary dermis in 20% of the patients, whereas IgG and IgM deposits in the papillary dermis were seen in 6.7% of the patients [Figure 2a and b]. The pattern of deposition of IgM, C3, and IgG was in the form of globular deposits. IHC using anti-CK5 antibodies was positive in 13 patients (86.7%) [Figure 3a and b].Thyroid function test revealed reduced T3, T4 and increased TSH in 4 (26.6%) patients. Rest of the investigations were normal.

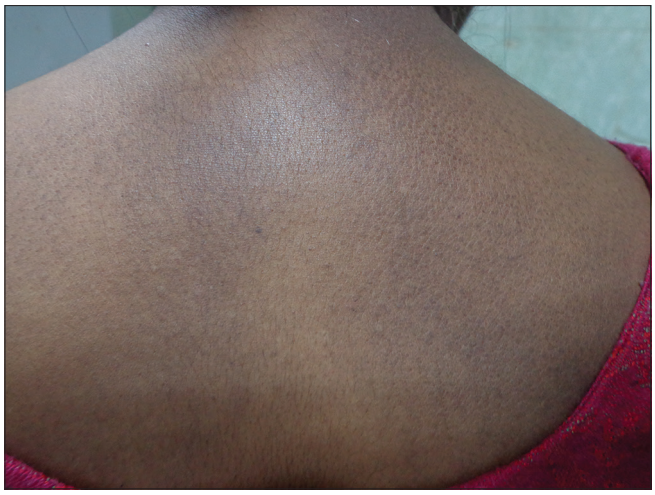

Figure 1: Reticulate and diffuse pigmentation in macular amyloidosis over the upper back

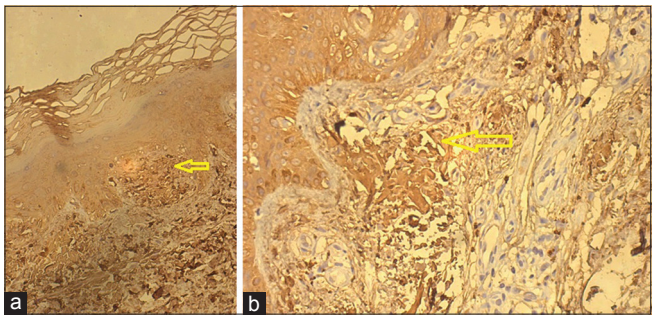

Figure 3: (a and b) CK-5 positive amyloid in papillary dermis (×40)

DIF findings in MA mainly showed positivity for IgM and C3. In a previous study of lichen amyloidosis, skin biopsies from all patients showed fluorescence with IgM, C3, and IgA throughout the basement membrane zone along with papillary dermal deposits in 20% of the patients. The intensity of fluorescence was strong for IgM in all (100%) these cases.[4] In our study, we noted DIF positivity in less number of patients which could be due to the less quantity of amyloid in the skin biopsy samples. IHC using anti-CK5 antibodies was done in all our cases with positivity in a good number of patients (86.7%). To date, there are only a limited number of reports on CK expression in a small series of primary cutaneous amyloidosis and secondary cutaneous amyloidosis.[5,6] In a previous study of patients with diffuse pigmentation of the back and arms, IHC of skin biopsies revealed positive immunoreactivity to anti-CK antibody (CK5, 6, 8, 18) in all 9 patients who had amyloid deposits on H and E staining.[7] Positivity to CK5 antibodies signifies the derivation of amyloid from keratin. The detection of CK, using an LP34 clone which detects CK5,6 and 18 has been described as the new gold standard for the diagnosis of cutaneous amyloidosis.[8] In patients presenting with this pattern of pigmentation, histopathology should be done along with special stains for amyloid. DIF and IHC have an adjunctive role in making the diagnosis.

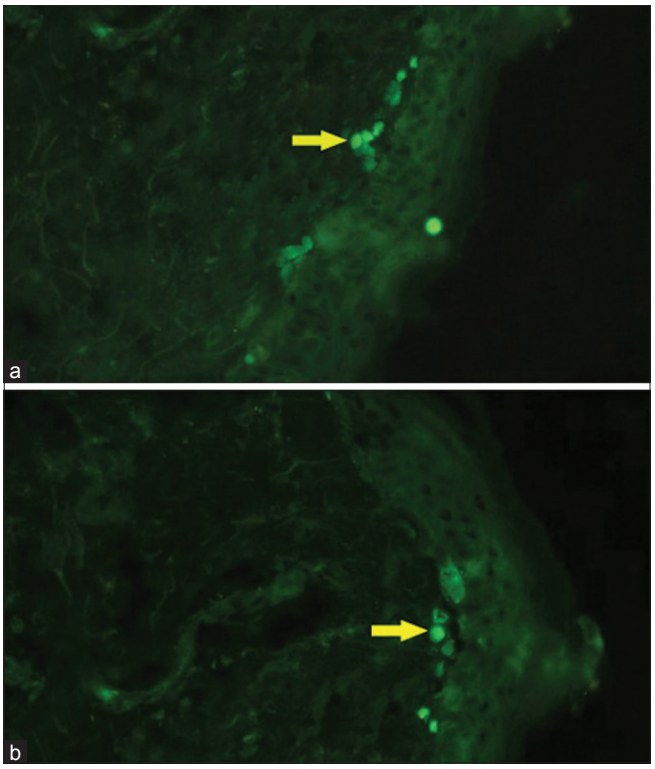

Figure 2: (a) Direct immunofluorescence showing globular depositsof IgM in papillary dermis (DIF, ×40), (b) Direct immunofluorescence showing globular positivityfor C3 in papillary dermis (DIF, ×40)

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Conflicts of interest

There are no conflicts of interest.

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