



INCIDENCE OF BIPHASIC AMYLOIDOSIS – A PROSPECTIVE STUDY

Dermatology

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ABSTRACT

Aim- To observe the incidence of biphasic amyloidosis.

Patients and methods- A total of 25 patients with primary cutaneous amyloidosis were included in the study. All patients were subjected to:

- Complete history
- General and Dermatological Examination
- Clinical photographs

Results- 25 patients were diagnosed with primary cutaneous amyloidosis attending the skin opd between the period of March 2017 – June 2017. Of these 8 were of biphasic amyloidosis, 12 were macular amyloidosis and 5 patients to be lichen amyloidosis.

Conclusion- Among the two types of primary cutaneous amyloidosis (PCA), macular amyloidosis was the most common variant accounting for 48%, lichen amyloidosis of 20%, and biphasic amyloidosis of 32%.

KEYWORDS:

primary cutaneous amyloidoses, Apple green birefringence

INTRODUCTION:

Amyloid means 'starch like' (Latin: *amylo-*), a term introduced by Rudolf Virchow, who described extracellular precipitates that turn brown after incubation with iodine. The key feature of amyloidosis is the extracellular deposition of autologous protein as morphologically characteristic amyloid fibrils. Amyloid proteins show a highly conserved antiparallel beta-sheet conformation and form non-branching linear fibrils of variable lengths, with diameter of 7.5-10nm.

Amyloidosis may be acquired or hereditary. Sub classification differentiates between localized cutaneous amyloidosis and cutaneous amyloidosis due to systemic disease. Amyloid can originate from various precursor proteins. The pathogenic modification of these precursor proteins may be triggered by chronic inflammation, malignancies, mutations, pro-amyloidogenic peptide sequences and micro environmental changes.

METHODS:

Our study involved a total of 25 patients presenting to our OPD, who were clinically diagnosed with primary cutaneous amyloidosis. All the patients were subjected to detailed history and clinical examination and photographs. All the participated subjects gave their informed consent and ethical clearance was obtained from the local ethical committee.

RESULTS:

Of the 25 cases, 12 were males and 13 were females. The age range was between 30 to 80 years with a mean age of (52.68) years. The duration of lesion ranged from 2 months to 8 years. Pruritus was the presenting symptom in 20 patients. Legs (shin) and upper arms were the common site of involvement.

Lichenified papules and pigmented macules were the common lesions observed in these patients. Lichenified papules were seen in 5 patients; pigmented macules were seen in 12 patients and lichenified papules with pigmented macules in 8 patients. No patients had any manifestation with systemic involvement.

CONCLUSION:

In a total of 25 patients, incidence of biphasic amyloidosis was of 32% (8) patients of which, 4 were females and 4 were males (1:1) ratio.

DISCUSSION:

Rokintansky gave the first description of amyloidosis in 1842. [1]

Amyloid deposits are characterized by amorphous, eosinophilic, acellular material on routine hematoxylin and eosin staining. The Congo-red stain gives an orange-red staining reaction to these deposits, which show apple-green birefringence when visualized under polarized light which is the most confirmatory test. The staining characteristics result from the cross-beta-pleated sheet conformation of the polypeptide backbones of the amyloid fibrils. These fibrils are ultra structurally 8 to 12 nm in width and of indeterminate length. [2] Chemically, there are more than 16 different amyloids. [2],[1]

Amyloidosis can be systemic or localized. Primary localized cutaneous amyloidosis is defined as localized amyloidosis of the skin without evidence of systemic involvement. It is of 3 clinical types: Lichen amyloidosis, macular amyloidosis and nodular or tumefactive amyloidosis. Macular and papular forms may co-exist in the same patient; this is known as biphasic amyloidosis. [1] Nodular amyloidosis is a rare condition. Secondary cutaneous amyloidosis is characterized by the presence of amyloid in the stroma of various cutaneous tumors such as basal cell carcinoma, squamous cell carcinoma, nevocellular nevi and a few adnexal tumours. [2] Secondary cutaneous amyloid deposits are also seen in seborrheic and actinic keratosis, Bowen's disease, porokeratosis, and skin treated with UVA radiation after the ingestion of psoralens. [3] Lichenoid amyloidosis can arise in a setting of macular amyloidosis, presumably due to scratching. When treated by intralesional injection of steroids, the lichenoid lesions can become macular. [2]

Lichen amyloidosis was first described by Gutmann in 1928. [2] It is seen most frequently in South East Asia, China, and South America. Lichen amyloidosis is the commonest type of primary cutaneous amyloidosis. Its etiology is unknown but chronic irritation to the skin has been proposed as an etiological factor. [3] However, there are examples where in cutaneous amyloidosis was not associated with scratching and chronic irritation was not the causal factor. [4],[5] Amyloid deposits have also been shown to contain disulfide bonds, which are present in keratin. Based on this finding and on those of ultra structural studies, cutaneous amyloid deposits are thought to be derived from degenerated keratin peptides of apoptotic keratinocytes transformed into amyloid fibrils by dermal macrophages and fibroblasts. [6],[7] A working hypothesis is that the epidermal trauma induced by long term scratching and rubbing seen in associated chronic diseases results in keratinocyte degradation and formation of amyloid. [6],[8] Cutaneous amyloidosis is thought to be caused by a filamentous degeneration of keratin-type intermediate filaments with subsequent apoptosis and

conversion of filamentous masses into amyloid material.^[9] Additionally, immunofluorescence studies with antikeratin antiserum have shown intense staining of the amyloid for the antikeratin antibody.^{[2], [10]} Direct immunofluorescence studies have shown fluorescence with immunoglobulins and complement in the papillary amyloid deposits chiefly with IgM and C3.^{[12],[13]}

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Lichen amyloidosis and macular amyloidosis show deposits of amyloid that are limited to the papillary dermis. Most of the amyloid is situated within the dermal papillae. Although, the deposits usually are smaller in macular amyloidosis than in lichen amyloidosis, differentiation of the two on the basis of the amount of amyloid is not possible.^{[2],[11]} The two conditions actually differ only in the appearance of the epidermis, which is hyperplastic and hyperkeratotic in lichen amyloidosis.^[2]

The clinical differential diagnosis of LA includes lichen simplex chronicus and lichen planus.^[6] Clinically macular amyloidosis, should be differentiated from post inflammatory hyper pigmentation, frictional melanosis, resolving lichen planus or neurodermatitis.

Lichen amyloidosis has been reported in association with several skin disorders, including atopic dermatitis, lichen planus, and mycosis fungoides. In this study, we encountered histopathological evidence of cutaneous amyloidosis in a case of lichen planus pigmentosus. Apart from the histological features of lichen planus pigmentosus, there were deposits of amorphous eosinophilic material in the papillary dermis which was proved as amyloid by Congo-red staining visualized under polarized light. As far as we know, this was the first case of lichen planus pigmentosus associated with cutaneous amyloidosis.

Primary cutaneous amyloidosis is a persistent and pruritic dermatosis, most common site of involvement being the legs (shin) and upper arms.

Management of cutaneous amyloidosis should be of multidisciplinary approach, and in cases of systemic amyloidosis the treatment of underlying diseases has the highest priority.

In all cases of cutaneous amyloidosis pruritus is the common presenting complaint, so antipruritic treatment should be one component of the treatment regimen. Topical corticosteroids and DMSO (dimethyl sulphoxide) can be administered.

In widespread cases of primary cutaneous amyloidosis, use of photo (chemo) therapy and/or systemic drug treatment (acitretin, cyclophosphamide) can be given.

In systemic amyloidosis, the major principle is to treat the underlying disease.

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Nil

CONFLICT OF INTEREST:

The authors declare that they have no conflict of interest

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