Full Blown Case of Lipoid Proteinosis

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Introduction

Lipoid Proteinosis (LP) is a genetically linked autosomally transferred rare chronic multisystem disease characterized by normal lipid profile but abnormal deposits of lipids and proteins in body, which slowly but steadily leads to systemic manifestations. Although it affects almost all systems of body, it predominantly manifests as lesions on skin and has characteristic intracranial calcifications. Full blown case of LP in a young female being an uncommon entity is being reported.

Case Report

A 22 years female presented with sudden onset generalized tonic clonic seizures. On clinical examination there were yellowish patchy lesions on the skin over the face and hands. Skin over the elbows (Fig. 1) and knees showed hyperkeratosis having dermatologic parlance with verrucous plaques. Lips were depigmented. The tongue was firm and slightly immobile. Hoarseness of voice was present since childhood. There was no family history of any similar disease. Also there was no history of consanguinity amongst her parents.

Blood counts and the lipid profile were within normal limits. Serum cholesterol was 133 mg/dl (normal < 200 mg/dl), serum triglycerides were 78 mg/dl (normal < 170 mg/dl) and serum HDL cholesterol was 34 mg/dl (normal < 70 mg/dl).

Plain radiograph of skull showed supra sellar comma shaped calcification (Fig. 2). CT scan showed symmetric comma shaped calcifications in medial temporal lobes bilaterally in the amygdale (Fig. 3). These lesions were hypo intense on all MRI pulse sequences (Fig. 4), consistent with MRI finding of calcification. The case was diagnosed as LP. Histopathology of punch biopsy from verrucous plaques on skin showed excessive cutaneous deposition of amorphous eosinophilic material surrounding the sweat glands, capillaries and in the thickened papillary dermis. The hyaline like material was diastase resistant and PAS positive. These were consistent with the clinical finding of LP.

Fig. 1 : Hyperkeratosis on skin over the right elbow.

Fig. 2 : Lateral radiograph of skull shows open 'C' shaped suprasellar calcification.

Fig. 3 : Plain CT brain shows bilateral comma shaped calcifications in amygdale.

Fig. 4 : FLAIR MRI image (0.35 T) shows bilateral bean shaped hypo intensities (due to calcification) in medial temporal lobes amygdale.

Discussion

Lipoid Proteinosis was first reported by Seibman in 1908 [1] and named by Urbach and Weithe as "Lipoidosis cutis et mucosae" who described it in detail in 1929. Hamada et al [2] mapped LP to chromosome 1q21 at D1S498 [3] and concluded that mutations outside exon 7 exhibit more severe mucocutaneous LP phenotype [4]. LP has a slow but steady and progressive course.

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The name LP is based on the fact that on histology the material deposited in the tissues resembles lipids and proteins.

Although most cases have been seen in the Caucasian races in South Africa and Central Europe, few cases have also been described from Asia [1,5]. Till date not more than 500 cases have been reported worldwide. Hence the actual data about incidence and prevalence is not built up. No definitive age, sex or race predilections exist. There is documented autosomal recessive inheritance as there is usually history of consanguinity among unaffected parents [6]. Autosomal dominant inheritance due to mutant genes has also been documented and only this subtype of parent disorder is associated with mental subnormality [1].

In the gene encoding extracellular matrix protein 1 (*ECM1*) on band 1q21 there occurs loss of function mutations. Patients with exon 7 mutations display slightly milder clinical features, while mutations in exon 6 result in a more severe phenotype [3,4].

Normally the *ECM1* gene produces a glycoprotein which is expressed in skin, mucosa and the entire human viscera. Mutation in this gene leads to deposition of hyaline like material in the skin and viscera in abnormal amounts which is the cause of clinical manifestations. These deposits stain positive with Periodic Acid-Schiff stain, are diastase resistant and negative for Congo red [7].

Deposits of hyaline like material can be seen as filling defects in upper aero-digestive tract on barium swallow examination. Radiological hallmark is the presence of bean to comma shaped intracranial calcifications in the temporal lobes in amygdala which is more evident in patients with longer disease duration. Epilepsy, when present, may be related to these calcifications. Patients with LP should be followed with MRI/CT in order to identify these abnormalities [8]. Radiographs and CT are adequate for a definitive diagnosis, while MRI is useful to assess the brain in totality. Erythropoietic protoporphyria (EPP) has skin lesions having the same appearance as in LP but the deposits are not seen around sweat glands. Increased protoporphyrin levels in erythrocytes are also seen in EPP [8]. Deposits in amyloidosis and xanthomas have different chemical

composition although externally skin might appear similar as in LP.

Some of the complications of LP include airway obstruction due to laryngeal involvement, hoarseness of voice and impaired speech due to vocal cord involvement, gastrointestinal bleed if small bowel is involved and corneal opacities and secondary glaucoma due to ocular involvement. There is no permanent cure for LP. Symptomatic medical treatment for skin lesions includes dimethyl sulphoxide, etretinate, intralesional heparin and D-penicillamine. However none of these medicines have shown consistent good results. Dermabrasion for skin lesions is done in cases which show no improvement by oral medications. Carbon dioxide laser for lesions of eyelids and aero digestive tract is also under consideration. Anticonvulsants are used when the patient has seizures.

To conclude, LP can now be detected early with wide scale availability of CT scan and MRI and a team effort of multiple specialties is essential for proper management.

Conflicts of Interest

None identified

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