

# A Rare Case Report of Lipoid Proteinosis

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## Case Report

**Abstract:** A 30 years male who was referred to our radiology department for CT scan of brain for evaluation of four episodes of seizures since one week. CT revealed bilateral, symmetrical horn shaped intracranial calcifications in the medial aspects of temporal regions. On further clinical examination, patient revealed moniliform blepharosis and various other cutaneous and mucosal manifestations pathognomonic of Lipoid proteinosis. Lipoid proteinosis is an extremely rare autosomal recessive genodermatosis characterized by multisystem deposition of hyaline material. Till date less than 500 cases of LP have been reported in literature. Because of its rarity and to spread awareness about this clinical entity in the scientific community the case is being reported here.

**Keywords:** Lipoid Proteinosis; Intracranial calcification;

## Introduction

A 30 year old male was referred for CT brain for the evaluation of 4 episodes of seizures in past one week. Plain CT brain axial sections brain window revealed bilateral symmetrical horn shaped calcifications of anteromedial aspect of temporal lobes. CT-based 3D-volume rendering demonstrated calcified lesions corresponding to the above mentioned sites. On retrograde clinical examination, he has husky and hoarse voice and developed multiple oral and cutaneous lesions such as macroglossia with lateral impressions, multiple papules plaques and nodules over the face extremities and axilla. On further clinical Examination we found beaded papules on the thickened margins of the eyelids resembling string of pearls termed "moniliform blepharosis" which was further confirmed with an ophthalmoscopic examination (Figure below).



Other accessory investigations such as X- ray and MRI brain were performed. Both AP and Lateral X- ray of skull revealed bilateral symmetrical radioopaque lesions noted

in parasellar region. MRI brain showed evidence of marked bilateral symmetrical hypointense signals on T2 and GRE images in the above mentioned sites. A skin biopsy was taken from a papule. Hematoxylin- eosin and periodic acid-Schiff (PAS)-stains revealed an amorphous hyaline material in the walls of dermal vessels and around the eccrine sweat glands. The material was PAS-positive but diastase negative. Based on all the above mentioned findings the patient was diagnosed as a very rare case of lipoid proteinosis.

## Discussion

Lipoid proteinosis was first of all reported by Seibenmann<sup>(1)</sup> in 1908, but was characterized as a clinical entity in 1929 by Urbach and Wiethe<sup>(1,2)</sup> and named as 'lipoidis cutis et mucosae'. Cases reported from Asia are very few, although most cases have been seen in the Caucasian races in South Africa and Central Europe<sup>(3)</sup>. It is a rare autosomal recessive genodermatosis due to a mutation in the gene encoding extracellular matrix protein 1 (*ECM1*) gene on chromosome 1q21, with approximately 500 cases described in the medical literature<sup>(4)</sup>. The mutated *ECM1* gene gives rise to hyaline material deposition in the dermis and thickening of the skin, mucous and basement membrane around blood vessels and adnexal epithelia. The patient may present with abnormal scarring and wound healing and premature skin aging<sup>(5)</sup>. Patients with exon 7 mutations display slightly milder clinical features, while mutations in exon 6 result in a more severe phenotype<sup>(5,6)</sup>. Hoarseness is present at birth or in the early infancy in two-thirds of patients, due to early hyaline material larynx infiltration, progressing with time<sup>(7)</sup>. Typical skin involvement includes whitish, beaded papules along the upper and lower eyelid margins- pathognomonic finding present in 50% of patients, termed "Moniliform blepharosis" and yellowish or waxy papules on the lips, over the knuckles, sides of the hands, on the knees, elbows and in the axillae. Sometimes vesiculo-bullous eruptions or acneiform lesions may be present, which are followed by nodules or plaques or pock-like scars<sup>(8,9)</sup> that are present

predominantly on the face and the extremities. As a multisystem disease, LP involves the CNS infrequently. CNS infiltration occurs predominantly around the amygdala and hippocampal capillaries, resulting in wall thickening, which later progresses to perivascular calcium deposition. Microscopic findings include gross amorphous calcifications encompassed by gliotic tissue and calcified thickened capillary walls<sup>(10)</sup>. Subsequent medial temporal lobe architectural distortion with gliotic tissue and calcium accumulation can lead to a constellation of reported neurologic manifestations, which range from migraine, variable degrees of mental retardation, seizures, depression, anxiety, and panic attacks to disturbances in decision making, memory, and abnormal social interaction patterns<sup>(11,12)</sup>. These varied

symptoms frequently lead to radiologic evaluation which, in unsuspected patients, may indicate the proper diagnosis. The most striking finding to a diagnostic radiology is bilateral, fairly dense, para sellar, symmetrical, regular calcification seen on the skull radiograph<sup>(13)</sup>. It is differently described as almond /bean/inverted comma or sickle-shaped on AP and on the lateral view of the skull the calcifications are projected largely above and partially superimposed on the sella. Curvilinear hyperattenuated horn-shaped lesions are well depicted by CT in the amygdaloid bodies. On MR imaging, such lesions are hypointense in all pulse sequences, especially in GRE T2\* weighted images. CT or MR imaging findings may be unremarkable in patients with LP in the absence of brain calcifications<sup>(10)</sup>.



Skull AP view and Topogram pathognomonic para-sellar, bean-shaped calcification



Axial Plain CT brain and bone window reveals bilateral, symmetrical calcification on anterior and medial aspects of both temporal horns



MPR and VRT CT image again shows para-sellar, bean-shaped calcification



Axial GRE and T2 Coronal well-defined, bilateral symmetrical, low signals noted in the antero-medial to the temporal horns, precisely corresponding to the para-sellar calcification

A skin biopsy of lesions reveals PAS positive, diastase negative pink hyaline-like deposits in the dermis and around capillaries with thickened basement membranes and around eccrine sweat glands.



Histopathology of punch biopsy from yellowish plaques on skin showed abundant deposition of amorphous PAS positive eosinophilic material.

To conclude, Selective brain parenchymal calcification is the hallmark of LP, with involvement of very specific sites such as the amygdalae, hippocampus, parahippocampal gyrus and the striatum. Plain radiographs and CT are adequate for a confident diagnosis of LP, while MRI is useful only to prove non-involvement of white matter or any other structure in the brain. Associated pathognomonic finding moniliform blepharospasm along with various other dermatological manifestations lead to diagnosis of LP. An appropriate radio-pathological workup can lead to an early detection so that a team effort of multiple specialties can render a proper management.

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