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Introduction

Amyloidosis is a clinicopathological disorder characterized by deposition of amorphous, eosinophilic, fibrillar material called amyloid in many sites of the body, including the brain (senile systemic amyloidosis) or occur as a primary amyloidosis in the absence of a systemic disease. Primary amyloidosis is a clinical disorder characterized by deposition of amorphous, eosinophilic, fibrillar material in a 47-year-old female who presented with subacute painless proptosis of the right eye. The patient had no associated systemic illness and was otherwise asymptomatic (H/E) and the x-ray findings were available. We present a case of primary, unilateral amyloidosis of the lacrimal gland along with a review of literature.

Case Presentation

A 47-year-old woman presented with right upper eyelid “droopiness” of unknown period of time associated with dry eye symptoms without history of trauma or inflammation to the area. Past medical history is remarkable for hypothyroidism treated with Synthroid and occasional alcohol use. She had two previous procedures (Botox injection) for facial asymmetry and right upper eyelid ptosis on 10/10/2013 and 10/31/2013. No history suggestive of hematologic, chronic inflammatory disorder or systemic malignancy. Ocular examination revealed best corrected visual acuity 20/20 in right eye and 20/20 in left eye. Right eye examination revealed proptosis and lateral ptosis of upper eyelid (Figure 1A) with increased retroproptosis and inferior orbitomeatal distance in the right side. There was no restriction of ocular movements or sensory alterations.

Computed tomography (CT) scans of orbit revealed enlargement of the right lacrimal gland, iso-dense, with specks of intralobular calcification, but no destruction or invasion of the overlying bone (Figure 1B). Magnetic resonance imaging was performed to further assess if bone matrix on affected orbit was involved. The patient underwent anterior orbitotomy with lacrimal gland excisional biopsy on 09/04/2014. Postoperative, ptosis and proptosis resolved and the patient is doing well with no evidence of local recurrence or systemic disease.

Gross examination revealed a pink/red hard mass and cut sections showed a yellow to orange mass with a gitty appearance without areas of hemorrhage and necrosis. Light microscopy with hematoxylin-eosin stain showed pale, eosinophilic, acellular deposits of amorphous material with no crystal or myeloma protein bands and lymphoid infiltration (Figure 2A). Congo red stain and polarized light microscopy revealed the deposits to be Congoophilic with the characteristic apple-green birefringence, confirming the diagnosis of amyloidosis (Figure 2B). Congo red and polarized light microscopy showed the deposits to be Congoophilic with the characteristic apple-green birefringence, confirming the diagnosis of amyloidosis (Figure 2B). Additionally, Congo red and polarized light microscopy was preferred to evaluate lymphomacrophagic infiltrate in the background of the amyloid deposits. Plasma cells were found to be polyclonal, expressing both kappa and lambda light chains.

Clinical Findings

The diagnosis of primary localized amyloidosis of the lacrimal gland was made based on histology. Hematoxylin and eosin stain showed islands of pink amorphous material with amyloid vacuoles, while polarized Congo Red stain demonstrated apple green birefringence of amyloid.

Hypothesis

Lacrimal gland amyloidosis, although rare, should be considered as a differential diagnosis for a calcific lacrimal gland mass. Review of published cases present a similar clinical picture: eyelid ptosis with subacute onset of proptosis in a middle age female.

Conclusion

In conclusion, the 20 cases of isolated lacrimal gland amyloidosis, including our case, share many characteristics. There are no clear-cut guidelines or protocols for managing localized amyloidosis of the lacrimal gland. Amyloidosis appears to be more commonly seen in elderly women and needed to be considered in the differential diagnosis of lacrimal gland mass to reduce the risk of possible misdiagnosis. Amyloidosis can only be confirmed by histopathological examination of biopsy. Although it is almost always localised, systemic disease must be ruled out.

References


Table 1: Lacrimal gland amyloidosis: clinical profile, management and outcomes

<table>
<thead>
<tr>
<th>Case</th>
<th>Age (yr)</th>
<th>Sex</th>
<th>Clinical feature</th>
<th>Treatment</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>60</td>
<td>F</td>
<td>Upper lid ptosis</td>
<td>Surgical excision</td>
<td>No recurrence (FU: 2 yr)</td>
</tr>
<tr>
<td>2</td>
<td>55</td>
<td>M</td>
<td>Lower lid swelling</td>
<td>Debulking</td>
<td>No recurrence (FU: 6 yr)</td>
</tr>
<tr>
<td>3</td>
<td>72</td>
<td>F</td>
<td>Dry eye</td>
<td>Medical</td>
<td>No recurrence (FU: 10 yr)</td>
</tr>
<tr>
<td>4</td>
<td>68</td>
<td>F</td>
<td>Upper lid ptosis</td>
<td>Surgical excision</td>
<td>No recurrence (FU: 1 yr)</td>
</tr>
<tr>
<td>5</td>
<td>57</td>
<td>M</td>
<td>Lower lid swelling</td>
<td>Surgical excision</td>
<td>No recurrence (FU: 2 yr)</td>
</tr>
</tbody>
</table>

Note: To the best of our knowledge, 19 cases have been reported so far in literature, with 3 cases being just mentioned without any details. The clinical profile, management, and outcomes of 18 cases are documented for analysis, an overall picture of lacrimal gland amyloidosis becomes clearer. The mean age at presentation was found to be 60 years (range: 27-87 years). A total of 82% of patients were females, with a male:female ratio of 1:5. The left eye was involved in 47% (8/17) of cases, and both eyes in 18% (3/17) of the cases. Upper lid swelling with a mass lesion was the most common presentation noted in 94% (16/17), followed by proptosis in 47% (8/17), proptosis in 11% (2/17), and the x-ray findings were available in 13 cases and the universal finding was mass lesion in the lacrimal fossa without bony erosions. Intranasal calcifications were noted in 54% (7/13) of the cases. Outcomes were available for 12 cases, none of the cases showed response and was followed up. The index case associated with multiple myeloma, bilateral lacrimal gland involvement was seen to regress following 4 cycles of lenalidomide-dexamethasone therapy followed by autologous stem cell rescue.

Symptoms and signs of visual disturbance were distinctly absent. The lacrimal gland, if palpable, was firm/hard and nontender. Imaging is thus an important tool in evaluation. However, histopathological examination of biopsy is confirmatory. The amyloid deposits are congophilic and give the characteristic apple-green birefringence under intense ultraviolet polarized light. Bony trabeculae with or without marrow may be noted corresponding to the intranasal calcifications noted radiologically. Additional studies can be performed to further classify this disorder. In situ hybridization for kappa and lambda light chains can be done to evaluate clonality of plasma cells. Immunocytochemistry is further useful for identifying different amyloid proteins such as amyloid P, amyloid AA and amyloid AL, that may help in differential diagnosis. Amyloid P protein is present in all types of amyloidosis. Amyloid AA protein reflects underlying chronic inflammatory disease and some forms of malignancy. In contrast, the absence of amyloid AA and the presence of amyloid AL guide towards plasma cell dyscrasia, long-term dialysis, and Alzheimer disease. Other investigative modalities, such as immunoelectron microscopy, amyloid protein sctigraphy, and radionucleotide iodine tracing, are more of research interest at present.