

CASE REPORT

Primary localised deep cutaneous amyloidosis of the eyelid

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Abstract

A 62-year-old lady presented with a six-month history of swelling of the left upper eyelid, resulting in mild mechanical ptosis. Clinical assessment suggested a provisional diagnosis of dermoid cyst. The lesion was excised and histology revealed nodular deposits of amorphous eosinophilic material surrounded by lymphocytes and plasma cells. Special histochemistry and immunoperoxidase stain results showed deposition of amyloid, non-AA type. The lesion recurred 6 months later.

Key words: Eye, eyelid, amyloidosis, primary localized amyloidosis

INTRODUCTION

Amyloidoses are a group of rare disorders characterised by extracellular deposition of several different types of proteins that share similar ultrastructural, immunofluorescent and histological features.¹ Amyloidosis is classified into primary or secondary types, and is further subdivided into localised and systemic forms. Ocular amyloidoses may occur in the eyelids, conjunctiva, cornea, retina, extraocular muscles or in the vitreous. The eyelids are one of the most commonly involved sites in dermal and ocular amyloidosis.² Cutaneous involvement of the eyelid is thought to be pathognomonic of primary systemic amyloidosis.³ Localised forms of amyloid deposits may also occur as a primary disease in the eye, or secondary to skin conditions like basal cell carcinoma, Bowen's disease and seborrhoeic keratosis.⁴

We report a case of primary localised deep cutaneous amyloidosis of the eyelid in the absence of systemic amyloidosis.

CASE REPORT

History

A 62-year-old Chinese female presented with swelling in the left upper eyelid of six months duration. There was no associated pain or redness of the eye. On examination of the left eye, a firm non-tender swelling measuring 15mm in largest

dimension was noted in the outer one-third of the upper eyelid. The overlying skin was not attached to the swelling. There was mild mechanical ptosis. Vision of the affected eye was graded as 6/12. The cornea, sclera, anterior chamber, iris, pupil and lens were normal. Ocular movements were within normal range. Intraocular pressure was 14 mm Hg. Fundus examination did not reveal any abnormality. The vision of the unaffected right eye was graded as 6/12 and the anterior chamber, fundus, ocular movements as well as intraocular pressure were all normal. X-ray of both the orbits was unremarkable. A provisional diagnosis of dermoid cyst was made. An excision biopsy of the tumour was performed. The mass was found to be in the deeper layers of the eyelid, close to the tarsal plate. The post-operative period was uneventful. Six months after the operation, the patient noticed a small swelling in the same region of the left upper eyelid, which was slowly increasing in size. She also noticed blurring of vision in the left eye due to obstruction by the swelling. On examination of the left eye, a non-tender firm swelling of approximately 15mm in size was noted in the temporal one-third of the left upper eyelid. MRI examination of the orbit showed a homogenous mass in the same region of the left upper eyelid. An excision biopsy was done and the mass was removed. Post-operative period was uneventful, and on examination the vision in the left eye was graded as 6/9.

Pathology

Grossly, both excision specimens showed brownish soft tissue (Fig. 1). Histology revealed deposits of amorphous eosinophilic material within fibrous tissue and blood vessel walls. These deposits were surrounded by some lymphocytes, plasma cells and foreign body-type multinucleated giant cells (Fig. 2). The Congo-red stain revealed salmon-pink deposits of amyloid, which showed apple-green birefringence on polarization. The deposits were potassium permanganate-resistant. Immunoperoxidase staining for Amyloid A (AA), as well as immunoglobulin light chains, was negative. A histological diagnosis of primary subcutaneous amyloidosis was made, based on the light microscopic findings and special stain results.

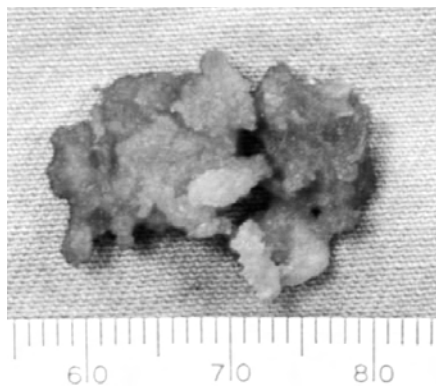


FIG. 1: Gross appearance of the excised mass.

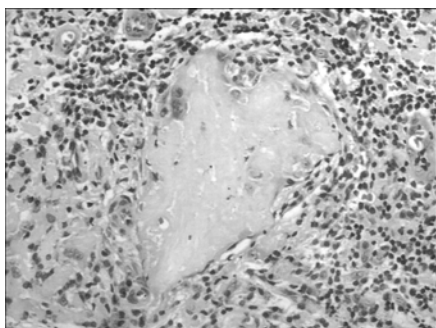


FIG. 2: Amyloid deposit surrounded by lymphocytes. Multinucleated giant cells are also seen (H&E).

Further management

Following the tissue diagnosis in both instances, the patient was investigated for systemic amyloidosis. Full blood counts, erythrocyte sedimentation rate, serum electrophoresis, urine for Bence-Jones protein, liver function studies and renal function studies were performed and the results were within normal limits.

It was concluded that the amyloid deposits in this case was localised and primary in nature, with no evidence of systemic amyloidosis, pre-existing dermatological condition or plasma cell dyscrasia. The patient is currently well and remains on close follow-up.

DISCUSSION

Primary localised amyloidosis may be classified into three separate types - lichen amyloidosis, macular variant and tumefactive forms.^{5,6} The lesions of lichen⁷ and macular amyloidosis are mostly found on the lower limbs. The tumefactive form or nodular localised primary amyloidosis is uncommon and presents as single or multiple nodules in the extremities, trunk, genitals or face. Localised nodular amyloidosis has also been reported as primary focal lesions in the urinary tract,^{8,9} respiratory tract,¹⁰ colon,¹¹ seminal vesicles¹² and spine.¹³ Occasionally these lesions have been mistaken for malignant neoplasms and may cause significant morbidity.¹⁴ Localised nodular amyloidosis is not associated with any underlying dermatologic or systemic disease, but some cases appear to have a pre-existing inflammatory condition. Lin *et al*¹⁵ have documented 4 cases of localised nodular amyloidosis of the cornea secondary to trichiasis, of which 3 patients presented with progressively enlarging vascularized masses in the cornea.

In a study by Looi¹⁶ amongst Malaysian patients over a period of 5½ years, localised amyloidosis comprised 90.9% of all types of amyloidosis and of these 7.5% were primary localised cutaneous amyloidosis. These lesions were categorised into lichen and macular types based on clinicopathologic findings and it was noted that there were no cases of nodular amyloidosis. The findings of this study also indicated that the amyloid fibrils deposited in localised amyloidosis were potassium permanganate-resistant and of non-AA type – these findings concurred with that in our case report.

The pathogenesis of localised amyloidosis is thought to reflect either local production of

amyloid fibril precursors or the properties of the particular microenvironment.¹⁷ In localised amyloidosis the fibrils are of amyloid light chain (AL) type and may be associated with local proliferation of B-cells or plasma cells. As such, a B-cell or plasma cell dyscrasia must be excluded in AL amyloidosis.

The outcome of localised primary cutaneous amyloidosis is variable. Brownstein and Helwig⁵ reported progression of primary cutaneous amyloidosis to systemic amyloidosis in five of 10 patients, i.e. a progression rate of 50%. However, a more recent study by Woollons and Black⁶ showed that the progression to systemic amyloidosis occurred in only 7% of their patients.

Treatment^{2,17} of amyloidosis is tailored to each individual patient. In cases of tumefactive deposits of amyloidosis, surgical excision may be curative. However, cases with large amyloid masses may require debulking prior to surgical excision. Radiotherapy may be of use in reducing the size of the tumourous mass before surgery. Some patients have small lesions with no significant loss of function. In such cases conservative management of regular follow-up with close observation of tumour size may be of choice. However, local recurrence after surgical removal of cutaneous lesions has been reported.¹⁸ This may be attributed to conservative excision and persistent local disease.

In conclusion, primary localised cutaneous amyloidosis of the eye is an uncommon condition, which may be missed by the unwary. The presence of chronic inflammatory cells and foreign body-type multinucleated giant cells may lead to an erroneous diagnosis of a non-neoplastic inflammatory lesion. As extramedullary plasmacytoma of the orbit and eye is well-documented,^{19, 20} it is important that this lesion is recognised so that an underlying treatable neoplastic disease can be excluded.

REFERENCES

1. Black MM. Primary localized amyloidosis of the skin: clinical variants, histochemistry and ultrastructure. In: Wegelius O, Pasternack A, editors. *Amyloidoses*. London: Academic Press; 1976. p. 479-513.
2. Lamkin JC, Jakobiec FA. Amyloidosis and the eye. In: Aiello LM, Albert DM, Dallow RL et al, editors. *Principles and Practice of Ophthalmology*. WB Saunders; 1994. p. 2963-70.
3. Brownstein MH, Elliott R, Helwig EB. Ophthalmic aspects of amyloidosis. *Am J Ophthalmol* 1970; 69: 423-30.

4. Lemke BN, Woog JJ, Stasior OG, Dortbach RK. Amyloidosis of the orbit and adnexa. In: Hornblass A, ed. *Oculoplastic, Orbital and Reconstructive Surgery: Orbit and Lacrimal System*. Baltimore: Williams & Wilkins; 1990. p. 907-14.
5. Brownstein MH, Helwig EB. The cutaneous amyloidoses, localized forms. *Arch Dermatol* 1970; 102: 8-19.
6. Woollons A, Black MM. Nodular localized primary cutaneous amyloidosis: a long-term follow-up study. *Br J Dermatol* 2002; 145: 105-9.
7. Rajagopalan K, Tay CH. Familial lichen amyloidosis: report of 19 cases in 4 generations of a Chinese family in Malaysia. *Br J Dermatol* 1972; 87: 123-129.
8. Alsikafi NF, O'Connor RC, Yang XJ, Steinberg GD. Primary amyloidosis of the bladder treated with partial cystectomy. *Can J Urol* 2003; 10(4): 1950-1.
9. Lau PC, Norman RW, Murphy DM. Localized amyloidosis of the urethra presenting as painful erection. *Can J Urol* 1995; 2(2): 148-9.
10. Pribitkin E, Friedman O, O'Hara B, Cunnane MF, Levi D, Rosen M et al. Amyloidosis of the upper aerodigestive tract. *Laryngoscope* 2003; 113(12): 2095-101.
11. Chen JH, Lai SJ, Tsai PP, Chen YF. Localized amyloidosis mimicking carcinoma of the colon. *Am J Roentgenol* 2002; 179(2): 536-7.
12. Maroun L, Jakobsen H, Kromann-Andersen B, Horn T. Amyloidosis of the seminal vesicle. *Scand J Urol Nephrol* 2003; 37(6): 519-21.
13. Unal A, Sutlap PN, Kyyyk M. Primary solitary amyloidoma of the thoracic spine: a case report and review of the literature. *Clin Neurol Neurosurg* 2003; 105(3): 167-9.
14. Glenner GG, Page DL. Amyloid, amyloidosis, and amyloidogenesis. *Int Rev Exp Pathol* 1976; 15: 1-92.
15. Lin PY, Kao SC, Hsueh KF, Chen WY, Lee SM, Lee FL et al. Localized amyloidosis of the cornea secondary to trichiasis: clinical course and pathogenesis. *Cornea* 2003; 22(5): 491-4.
16. Looi LM. The pattern of amyloidosis in a Malaysian patient population. *Histopathol* 1991; 18: 133-41.
17. Gillmore JD, Hawkins PN, Pepys MB. Amyloidosis: a review of recent diagnostic and therapeutic developments. *Br J Haematol* 1997; 99: 245-56.
18. Rodrigues G, Sanghvi V, Lala M. A rare cause of unilateral upper and lower eyelid swelling: isolated conjunctival amyloidosis. *Korean J Ophthalmol* 2001; 15: 38-40.
19. Sen S, Kashyap S, Betharia S. Primary orbital plasmacytoma: a case report. *Orbit* 2003; 22(4): 317-9.
20. Adkins JW, Shields JA, Shields CL, Eagle RC Jr, Flanagan JC, Campanella PC. Plasmacytoma of the eye and orbit. *Int Ophthalmol* 1996-97; 20(6): 339-43.