

Localized Amyloid Deposition in the Nasopharynx and Neck, Mimicking Nasopharyngeal Carcinoma with Neck Metastasis

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Amyloidosis results from the deposition of amyloid proteins in organs and tissues. Clinically, it can be classified into systemic and localized forms. Here, we report a case of localized amyloidosis of the nasopharynx and neck. The initial presentation was a nasopharyngeal mass, and bilateral neck masses, mimicking nasopharyngeal carcinoma with neck metastasis. Computed tomographic scans of the neck revealed asymmetry between the bilateral nasopharyngeal walls, and multiple radio-opaque masses in both sides of the neck. A nasopharyngeal biopsy was performed and confirmed amyloid deposition. Subsequent neck-mass excision biopsies confirmed that the neck masses were also amyloid deposits. Further laboratory examinations revealed no systemic involvement. There was no disease progression after local excision. Localized amyloidosis in the head and neck is rare, but can have various manifestations that may sometimes mimic neoplasms. [*J Chin Med Assoc* 2005;68(3):142–145]

Key Words: amyloidosis, localized amyloidosis, nasopharyngeal carcinoma, nasopharynx, neck

Introduction

Amyloidosis is a group of disorders that result from the deposition of insoluble, fibrous, amyloid protein, mainly in the extracellular spaces of organs and tissues. On electron microscopy, amyloid deposits have a fibrous appearance with a cross-linked, beta-pleated sheet conformation. They are eosinophilic after hematoxylin-eosin staining, and demonstrate an apple-green birefringence on polarized light microscopy after staining with Congo red.¹

Several classifications of amyloidosis have been proposed. Some authors have classified it according to the biochemical nature of the fibril-forming protein; others have classified it, based on clinical presentations, into systemic and localized types.² Systemic amyloidosis reflects the involvement of multiple organ systems, such as the cardiovascular and gastrointestinal systems, together with the lymph nodes, spleen, liver, kidneys and adrenals.² Systemic amyloidoses include biochemically distinct forms that are neoplastic,

inflammatory, genetic or iatrogenic in origin. Localized amyloidoses refer to those having infiltration in isolated organs, without evidence of generalized involvement. Localized amyloidosis is an uncommon condition of the head and neck.³

Nasopharyngeal carcinoma (NPC) is relatively uncommon in Western countries, but occurs with high frequency in Southeast Asia.⁴ It has a high tendency for cervical lymph-node metastasis when compared with other head and neck cancers; indeed, a neck mass has been the chief complaint prompting medical attention in 40–50% of patients with NPC.⁴ Thus, NPC should be ruled out if a patient presents with nasopharyngeal and neck masses, but because of infrequent occurrence, amyloidosis is rarely considered in the differential diagnosis.

Here, we report a rare case of localized amyloidosis in the head and neck, with a presentation of nasopharyngeal and neck masses. The presentation mimics NPC with neck metastasis. In fact, this is the first report in the literature of localized amyloidosis

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affecting both the nasopharynx and neck. A brief review of localized amyloidosis at these sites is also presented.

Case Report

A healthy 81-year-old woman presented to our department in May 2003 for the evaluation of bilateral enlarging neck masses. She had noticed her neck masses years before, but did not seek medical attention. On examination, there were several non-tender, firm masses in the posterior triangle of the right neck and bilateral submandibular regions, with the largest mass being 2 × 2 cm. Endoscopic examination revealed a bulging mass on the posterior wall of the nasopharynx (Figure 1).

Under the impression of NPC with neck metastasis, a nasopharyngeal biopsy was taken. Histopathologic examination revealed deposits of eosinophilic, homogeneous material in a subepithelial location. Apple-green birefringence was seen when histologic sections stained with Congo red were viewed with polarized light. A diagnosis of nasopharyngeal amyloidosis was made. Computed tomography (CT) revealed heterogeneous, asymmetric nasopharyngeal walls, and several radio-opaque masses in the bilateral submandibular areas and posterior triangle of the right neck (Figures 2 and 3). Selected, excisional biopsies of neck masses in the posterior triangle of the right neck were performed under general anesthesia. Pathologic examination also confirmed the presence of amyloid deposits between cells and around vessels (Figure 4).

Further evaluation for systemic diseases failed to demonstrate any evidence of systemic amyloidosis or

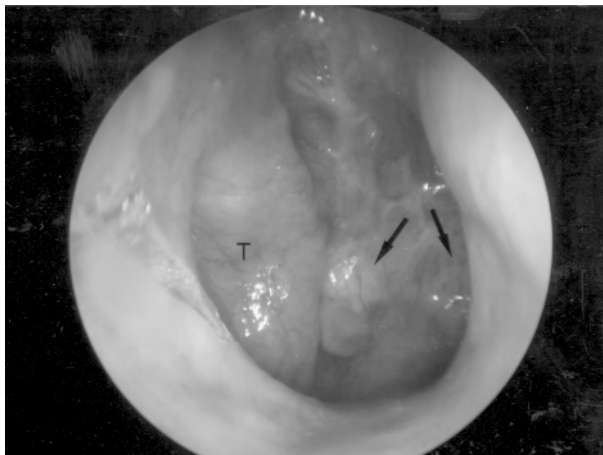


Figure 1. Endoscopic view of the right nasopharynx showing a bulging mass (arrows). T = torus tubarius.

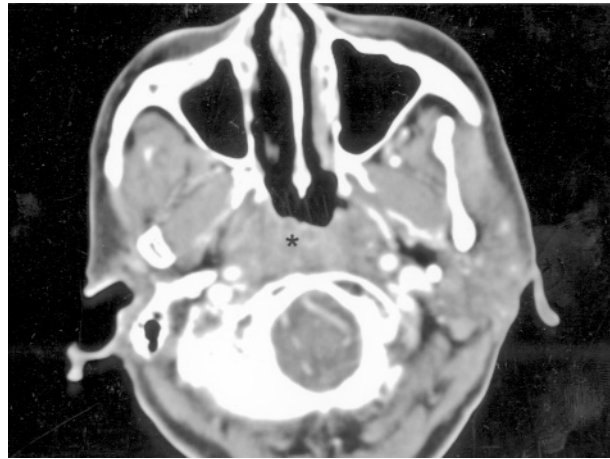


Figure 2. Axial computed tomographic section with contrast material showing a bulging right nasopharynx (asterisk).



Figure 3. Axial computed tomographic section revealing several radio-opaque masses in the bilateral submandibular areas (arrows) and posterior triangle of the right neck (arrowhead).

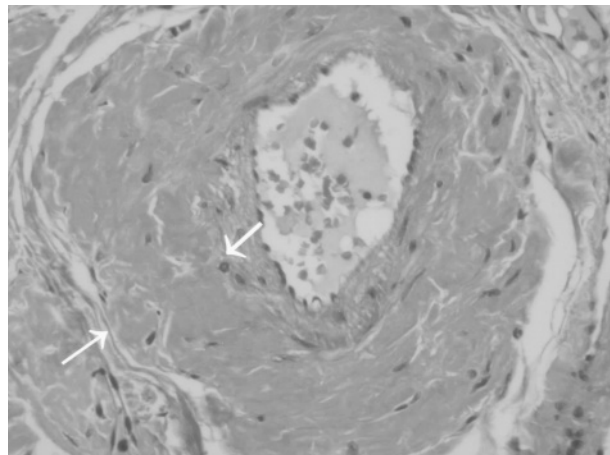


Figure 4. Photomicrograph of the neck mass demonstrating amyloid deposition in the vascular wall; the entire vascular wall is almost completely replaced by pink-colored amorphous material (between the arrows). (Hematoxylin & eosin, original magnification × 200.)

any predisposing cause. A chest radiograph, urinalysis, liver function tests, blood urea nitrogen, serum creatinine, complement factors, coagulation tests, and serum protein electrophoresis were all within normal limits. Cardiologic evaluation, including an electrocardiogram, produced normal results. After consulting with a hematologic specialist, a bone-marrow biopsy was suggested to exclude the possibility of myeloma or plasma-cell dyscrasia, and the patient agreed to this approach. Since the bone-marrow biopsy revealed no pathologic findings, and all other laboratory studies revealed negative results for systemic involvement, the patient refused to undergo further biopsies, including abdominal fat aspiration and rectal biopsy.

No postoperative complications were noted, and there was no evidence of disease progression during the following 9 months.

Discussion

In the head and neck region, amyloid deposits have been reported in the tongue, larynx, thyroid, parathyroid gland, eyelid, nasopharynx, gingiva, cervical lymph nodes, maxilla, skull base, nasi, paranasal sinus, nasal septum, parotid gland, external ear canal, oral cavity, pharynx, and the pinna.^{1,5} The larynx is the most common site of involvement, and amyloid deposits account for 0.2–1.5% of benign laryngeal tumors.⁶ Amyloidosis rarely involves the nasopharynx or neck.^{3,5} In the present case, it was interesting to find amyloid deposits at more than 1 site in the head and neck. Because of its infrequent occurrence, amyloidosis is rarely considered in the differential diagnosis of nasopharyngeal and neck masses. However, both the nasopharynx and neck were involved in our case, mimicking NPC with multiple neck metastases. To our knowledge, there are no similar cases in the English scientific literature.

The clinical manifestations of amyloidosis are varied and depend on the biochemical nature of the fibril protein and area of involvement. In the head and neck regions, amyloid macroglossia is most frequently noted and accounts for 12–26% of amyloidosis cases.⁶ Other presentations of amyloidosis in the head and neck regions are similar to those of other mass lesions (e.g. tumors, cysts), and include symptoms of hoarseness, obstructive symptoms, other symptoms secondary to obstruction, and bleeding.⁵ In systemic amyloidosis, proteinuria is often the first symptom; other manifestations include peripheral neuropathies, dementia and cognitive dysfunction, and organ enlargement, especially of the liver, kidney, spleen and heart.²

Symptoms of localized nasopharyngeal amyloidosis include postnasal discharge, nasal obstruction, recurrent epistaxis, and ear problems secondary to Eustachian tube dysfunction.⁷ However, our patient had neither ear nor nose symptoms.

Diagnosis of amyloidosis requires pathologic examination of amyloid deposits in tissue specimens. On gross examination, organs infiltrated with amyloid have a characteristic rubbery and firm consistency. A waxy, gray or yellow appearance is typical. On microscopic examination, amyloid deposits are focally located within the mesenchyme of affected organs with a perivascular distribution. The widely used Congo red stain imparts a characteristic apple-green birefringence when stained tissue sections are viewed using a polarizing microscope. Diagnosis of systemic amyloidosis can be achieved with an abdominal fat aspirate or rectal biopsy; these 2 tests are positive in 75–90% of patients. Specific organ involvement may also be excluded by laboratory or radiologic examinations.⁸

Systemic amyloidosis is a serious and usually fatal condition, in which accumulation of amyloid fibrils in the tissues destroys normal structure and function. Conversely, localized amyloidosis has an excellent prognosis. No documentation exists to suggest that localized amyloidosis can progress to systemic amyloidosis. Thus, it is important to determine whether amyloid deposits in the head and neck represent the systemic or localized form:¹ a biopsy from the head and neck that reveals amyloid therefore necessitates evaluation for systemic involvement by rectal biopsy or abdominal fat aspiration. To identify the relationship between amyloidosis and multiple myeloma, serum and urine electrophoresis and immunoelectrophoresis should also be performed. Although our patient did not undergo rectal biopsy or abdominal fat aspiration, several evaluations for systemic involvement failed to demonstrate any evidence of systemic amyloidosis or predisposing causes.

Amyloid deposits appear as relatively well-defined, submucosal, homogeneous masses in CT scans.⁹ Such deposits usually appear homogeneous, except for the presence of calcification, and often simulate both inflammatory and neoplastic conditions. The presence of calcification helps to narrow the differential diagnosis. In earlier reports, CT images of nasopharyngeal amyloidosis generally revealed relatively well-defined, high-attenuation, soft-tissue masses with no, or only slight, contrast enhancement.^{3,9,10} The images also demonstrated some form of calcification, ranging from subtle psammomatous calcification to well-defined foci.^{3,9,10} CT findings of amyloidosis have not

been characterized in the neck. Clevens et al reported CT images from a patient with neck amyloidoma to show a multilobulated mass, consistent with lymphadenopathy.⁸ However, other authors considered the CT findings of neck amyloidosis to be nondescript.^{9,10} In our case, CT images of the neck revealed multiple homogeneous masses, some of which were calcified. In localized nasopharyngeal amyloidosis with characteristic neck calcification on CT scans, the possibility of neck amyloid deposition should be considered.

Surgery is one of the treatment options for localized amyloidosis of the head and neck. Localized excision should be considered when the amyloid deposits cause morbidity. When amyloidosis involves the head and neck extensively, total excision can impair organ function. Thus, if the amyloid deposits do not cause morbidity and grow slowly, conservative treatment with careful observation is suggested.¹¹ In the present case, we did not perform extensive excision because there was no morbidity due to amyloidosis. The patient was carefully observed, and no disease progression was noted; the latter finding is compatible with other reported cases of localized amyloidosis.^{6-8,11}

In conclusion, amyloid deposits in the head and neck necessitate further evaluation for systemic amyloidosis. Localized excision is a good treatment option for localized amyloidosis, which rarely involves multiple sites in the head and neck, and can provide an accurate diagnosis. However, as localized amyloidosis is a slow, benign process, surgical intervention must preserve organ function as much as possible. Although rare, amyloidosis should be considered in the differential diagnosis of head and neck masses. Indeed, otolaryngologists must be aware of the various manifestations

of localized amyloidosis and arrange treatment accordingly.

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