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A Case of Syringomatous Adenoma of the Nipple

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Key Words

Syringomatous adenoma of the nipple · Nodule · Areola · Eccrine sweat ducts

Abstract

Syringomatous adenoma of the nipple (SAN) is an extremely rare disease originating in the axillary gland; it was first reported by Rosen in 1983 [Am J Surg Pathol 1983;7:739–745]. Since then, 34 cases have been reported worldwide. We present the case of a 51-year-old man with SAN, in whom local excision of the tumor was performed. Histologically, the tumor consisted of tubules, ductules and epithelial cell strands, and most of the proliferating ducts presented with a characteristic teardrop or comma-shaped appearance.

Introduction

In 1983, Rosen [1] first described syringomatous adenoma of the nipple (SAN), a benign tumor of the breast that shows locally infiltrative proliferation and is histologically similar to syringomas. Since then, 34 cases have been reported worldwide. We describe a case of SAN that is the fourth in Japan and the first case reported here within the field of dermatology.

Case Report

The patient was a 51-year-old male office worker who visited the Dermatology and Allergology Clinic of our hospital in July 2009 for evaluation of a subcutaneous nodule in the right breast. He had first noticed the lump 5 years earlier and had become concerned as the lump gradually increased in size. Both personal and family medical history were unremarkable.

The lesion was a relatively well-circumscribed, elastic, hard, 17-mm subcutaneous nodule adjacent to the areola of the right breast. The lesion was covered by normal-colored skin and protruded

slightly ([fig. 1](#)). We considered the lesion likely to be a mammary gland tumor, and the patient was referred to the Department of Breast Surgery for further evaluation.

Mammography showed a well-circumscribed nodule with a smooth margin on the outside of the upper right breast. Ultrasonography showed a well-circumscribed hypoechoic area on the same site. Standard laboratory tests were normal. These results indicated that the lesion was not a malignant tumor; furthermore, it was determined that the lesion had not derived from the mammary gland.

Total excision of the lesion was performed at the Department of Dermatology and Allergology. Histopathological analysis revealed several relatively well-circumscribed nodular lesions occurring from within the dermis to the subcutaneous tissue. Cells within the nodules showed two phases: (i) proliferating tumor cells with compressed duct-like structures surrounded by fibrotic stromal cells and (ii) other scattered tumor cells filled with abundant mucus and with no apparent duct-like structures. Transition between the two phases was observed ([fig. 2a](#)). The highly magnified image of the duct-like structures showed proliferation of multilayered epithelial cell nests forming comma-shaped partial ducts. The duct-like structures were composed of an external layer of relatively pale-stained tumor cells and an internal layer of tumor cells with eosinophilic cytoplasm ([fig. 2b](#)). The stromal cells tested positive for Alcian blue staining and showed deposition of mucus and hyalinization of collagen fibers. Images of dyskaryosis or karyokinesis in the tumor cells were unremarkable.

In immunohistochemical staining, the cells within the lesions all tested positive for antibodies to AE1/AE3, CK7, CAM5.2, p63, SMA and s-100 protein. The myoepithelial cells were positive for anti-p63 antibody, and the epithelial cells were negative; thus, the epithelial cell nests showed a biphasic staining pattern, confirming their benign nature. The cells within the lesions were negative for antibodies to estrogen and progesterone receptors. Based on the morphological features and the findings of the immunohistochemical staining, these tumors were diagnosed as SAN.

Discussion

There have been English-language reports on 34 cases of SAN since Rosen [1] initially reported 5 cases in 1983 ([table 1](#)). SAN is a locally infiltrative tumor that does not cause distant metastasis; however, recurrence has been reported in cases of incomplete excision [2–7].

SAN is a rare tumor, and diagnosis can be difficult. Based on histological classification of mammary gland tumors, differential diagnoses include nipple adenomas and low-grade adenosquamous carcinomas. Nipple adenomas are papillary or solid adenomas developing within the nipple where proliferation of papillary epithelium is remarkable [1, 2]. Low-grade adenosquamous carcinomas that derive from the salivary gland duct show an adenoma-like structure. Because they frequently develop in the large and small salivary glands, these carcinomas can be differentiated from their sites of origin [8].

Based on histological classification of apocrine and eccrine sweat gland tumors, differential diagnoses include malignant mixed tumors and microcystic adnexal carcinomas (MACs) [9, 10]. Malignant mixed tumors are composed of both epithelial and stromal components and have a cartilage-like appearance. MACs derive from the eccrine sweat ducts and have an upper layer composed of funicular, keratinous cyst-like and syringoma-like structures, and a lower layer composed of duct-like structures and funicular structures. The face is a common anatomic site for MACs. MACs differ from SAN in that they have a high recurrence rate, compared to a low recurrence rate for SAN even after conservative excision. Another difference is that metastasis of MACs has been reported, but there have been no reports of SAN metastasis [11].

SAN forms comma-shaped cell nests or small glandular cavities with single or multiple layers of small homogeneous epithelial cells in a background of dense stromal cells. It proliferates and can infiltrate tissue from the nipple to as far as the subareolar stroma. Some SAN differentiate to squamous epithelium.

Based on morphological features, we diagnosed the tumors in this case as SAN. The tumors are likely to have originated from the eccrine sweat ducts remaining in the breast. To our knowledge, only 4 cases of SAN, including our case, have been reported in Japan since 1983. The cases include 3 women and 1 man, ranging in age from 36 to 87 years (mean age 63). The sites of origin were the nipple in 3 cases and the areola in 1 case.

Various tumors develop in the breast. Dermatologists do not typically encounter this rare tumor; thus, caution is required. SAN should also be considered as one of the differential diagnoses. Careful excision is necessary for the treatment of SAN in order to avoid recurrence of the tumor.

Table 1. Cases of SAN

Patient no.	Age years	Sex	Size cm	Treatment	Recurrence
1	36	F	3	Biopsy	Yes
2	28	F	2	Local excision	No
3	38	F	1.5	Local excision	No
4	41	F	1.2	Simple mastectomy	No
5	76	M	1.1	Complete excision	No
6	67	F	1	Local excision	Yes
7	40	F	1.2	Local excision	No
8	33	F	1	Local excision	Yes
9	23	F	1	Local excision	No
10	61	F	2	Local excision	No
11	61	F	2	Local excision	Yes
12	63	F	2.2	Subcutaneous mastectomy	Yes
13	11	F	1.3	Local excision	Yes
14	31	F	1	Local excision	No
15	28	F	3	Local excision	Unknown
16	22	F	2	Local excision	Unknown
17	66	F	3.5	Simple mastectomy	No
18	34	F	Not given	Local excision	No
19	74	F	3	Simple mastectomy	No
20	61	F	2 (right), 1 (left)	R: simple mastectomy/L: local excision	No
21	35	F	1	Partial mastectomy	No
22	68	F	1.5	Mastectomy with axillary node sampling	No
23	71	F	2	Local excision	No
24	45	F	2	Local excision	No
25	41	F	Not given	Local excision	No
26	23	F	3.5×2.5×1.6	Local excision	No
27	36	F	2	Local excision	No
28	87	F	1	Simple mastectomy	Unknown
29	76	F	3	Mastectomy with axillary lymphadenectomy	Unknown
30	44	F	0.75	Local excision	No
31	32	F	0.5	Local excision	No
32	39	F	Not given	Local excision	No
33	32	F	4×2	Local excision	No
34	40	F	0.8	Local excision	No

Fig. 1. A firm mass, 17 mm in diameter, located in the subareolar area, immediately to the right.

Fig. 2. **a** Compressed duct-like structures in a densely fibrotic stroma. **b** The ducts, lined by one or more layers of cells, have teardrop, comma-like and branching shapes, with lumens that are open and round or filled with small uniform cells.

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