J Tokyo Wom Med Univ
84 (Extra 3) E435～E439 (2014)

Report

A Case of Adenoid Cystic Carcinoma of the Breast

Hidenori KAMIO[1], Takako KAMIO[1], Hiroko MIURA[1], Mamiko UBUKATA[1], Eiichiro NOGUCHI[1], Tetsuya OHCHI[1], Kazuho HONDA[2] and Shingo KAMEOKA[1]

[1]Department of Surgery II, Tokyo Women's Medical University
[2]Department of Pathology II, Tokyo Women's Medical University School of Medicine

(Accepted September 29, 2014)

A case of adenoid cystic carcinoma with a primary breast lesion is reported together with a brief discussion of the literature. The patient was a 71-year-old woman. On examination she was found to have a mass beneath and somewhat lateral and inferior to the left breast, and she was referred to our hospital for detailed examination. Adenoid cystic carcinoma was diagnosed on needle biopsy, and mastectomy and sentinel lymph node biopsy were performed. On histopathology, nests of various sizes were present as if surrounding the interstitium, and cribriform and solid structures were seen. In the nests, true glandular lumina and pseudocysts were seen, presenting a so-called adenoid cystic pattern. The tumor cells were small, the nuclear grade was low, and no vascular invasion was seen. Adenoid cystic carcinoma is generally thought to have a fairly good prognosis, but many are triple-negative breast cancers, for which the prognosis is poor, and the course needs to be monitored appropriately.

Key Words: breast cancer, adenoid cystic carcinoma, triple-negative

Introduction

Adenoid cystic carcinoma (ACC) of the breast is extremely rare, accounting for about 0.1% of all breast cancers[1)2)]. Many ACC patients are triple-negative, but it is reported that the frequency of axillary lymph node and distant metastases is low, and that the prognosis with this histological type is fairly good[3)]. The case of a patient with ACC is reported accompanied by a brief discussion of the literature.

Case Report

Patient: A 71-year-old woman.

Chief complaint: Left breast lump and breast pain.

Current history: The patient had felt left breast pain and a lump 4 years earlier, and her course was observed. A lump was seen beneath and somewhat lateral and inferior to the left nipple on breast ultrasound examination, and she was referred to our hospital for detailed examination.

Past history: Trigeminal nerve palsy, hyperlipidemia.

Family history: A sister with lung cancer.

Present status: An elastic-hard, readily movable mass, 25 mm in diameter, was palpated beneath and somewhat lateral and inferior to the left nipple. There was no axillary lymphadenopathy.

Blood test findings: No abnormalities were seen in blood counts or biochemical tests. Of the tumor markers, a slight elevation was seen in p53 (1.41 U/mL), but no other markers were elevated (CEA, NCT-ST-439, CA15-3, BCA225, HER2 protein).

Mammography findings: A lobulated mass that was poorly circumscribed in parts was seen adjacent to and somewhat lateral and inferior to the nipple of the left breast (Fig. 1).

Breast ultrasound findings: A well-circumscribed, lobulated, hypoechoic mass, 22 mm × 16 mm × 13 mm in size, with a smooth margin was seen at 5 o'clock on the left side. The internal structure was heterogeneous, and the posterior echo was unchanged (Fig. 2).

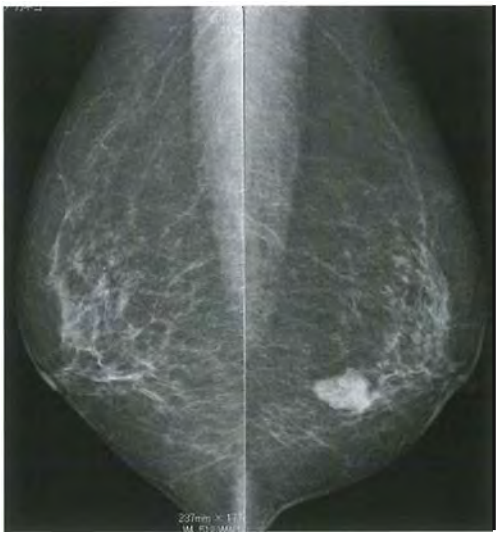

Fig. 1 Mammography
A lobulated mass that is poorly circumscribed in parts is seen adjacent to and somewhat lateral and inferior to the nipple of the left breast.

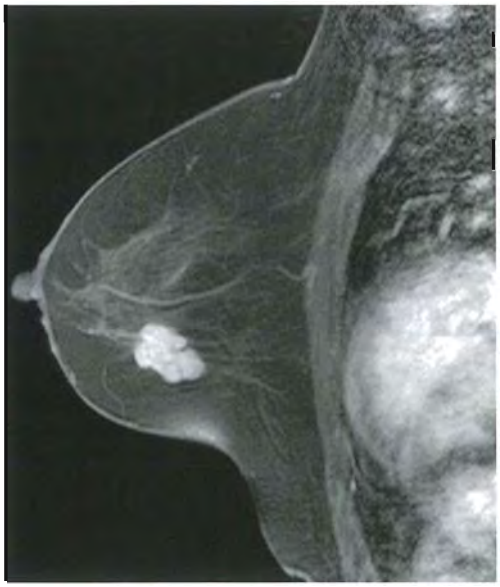

Fig. 3 MRI
A lobulated nodular shadow of 25 mm in size with contrast enhancement is seen in the left lateroinferior area.

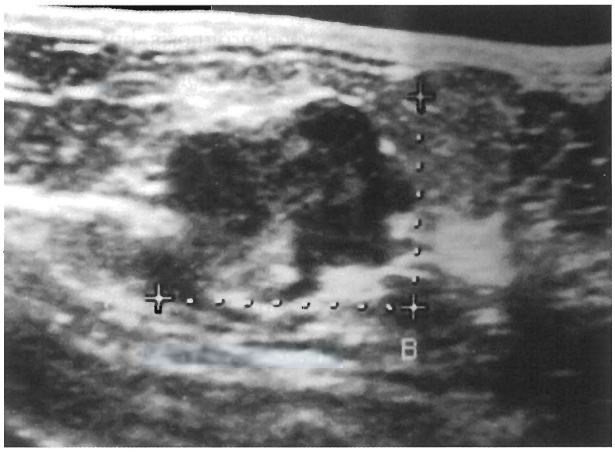

Fig. 2 Ultrasonography
A well-circumscribed, lobulated, hypoechoic mass, 22 mm × 16 mm × 13 mm in size, with a smooth margin is seen at 5 o'clock on the left side. The internal structure is heterogeneous, and the posterior echo is unchanged.

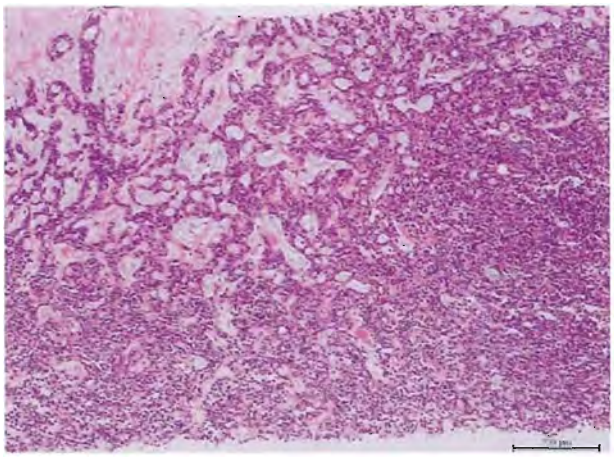

Fig. 4 Histopathological finding (CNB)
Proliferation of small roudish cells arranged into cord-like, cribriform, and/or solid architecture was seen against a background of myxoid stroma.

Breast MRI findings: A lobulated nodular shadow, 25 mm in size, with contrast enhancement was seen in the left lateroinferior area (Fig. 3).

Core needle biopsy (CNB) findings: Proliferation of small roudish cells arranged into cord-like, cribriform, and/or solid architecture was seen against a background of myxoid stroma (Fig. 4). True glandular lumina and pseudocysts were seen in the nest, and ACC was diagnosed.

Surgical findings: The tumor extended to beneath the nipple, and a mastectomy and sentinel lymph node biopsy were performed. Intraoperative rapid pathological diagnosis confirmed that there were no lymph node metastases.

Gross findings of resected specimens: The tumor section surface was 30 mm × 22 mm, and the tumor had mixed solid and cystic portions.

Histopathological findings: On hematoxylin and eosin (HE) staining, fairly diffuse invasion of the in-

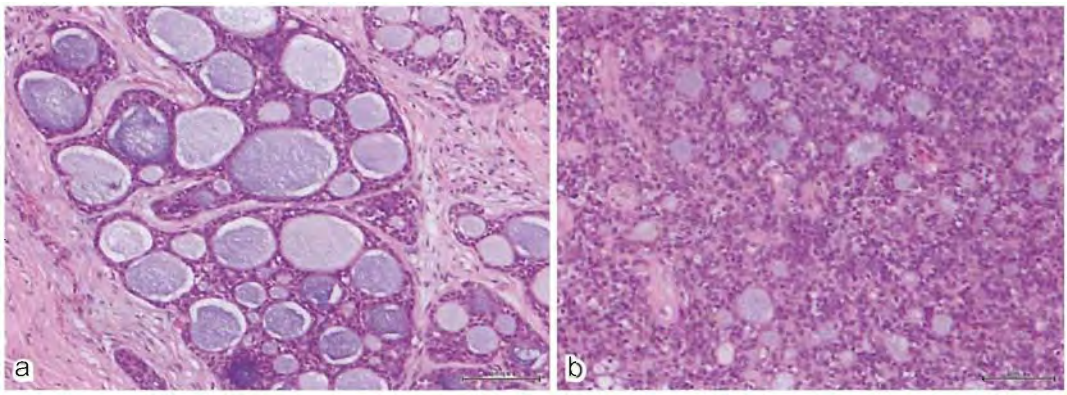

Fig. 5 Histopathological findings (×100)
On HE staining, fairly diffuse invasion of the interstitium by cell nests of various sizes and consisting of true glandular lumina and pseudocysts is seen.
a: Numerous lumina showing cribriform structures are seen.
b: A portion showing a solid structure.

terstitium by cell nests of various sizes with true glandular lumina and pseudocysts was seen. Parts with numerous lumina and showing a cribriform structure (Fig. 5a) and parts with a solid structure (Fig. 5b) were evident. The true glandular lumina were positive on periodic acid schiff (PAS) staining, and a mucoid substance in the pseudocysts was positive on Alcian blue staining. Thus, ACC was diagnosed. The tumor cells were small, nuclear atypia was mild, and no vascular invasion was seen. Specimens were negative for ER and PgR, and HER2 (1+) and Ki-67 were below 5%.

Postoperative course: The patient's postoperative course was good, and the patient was released from hospital on Day 10. Tegafur-uracil was administered as adjuvant therapy.

Discussion

ACC is a malignant tumor that occurs commonly in the salivary glands and bronchi, accounting for 36.5% of malignant tumors in the submandibular glands and 16.8% in the parotid glands[4]. However, the incidence in the breast is very low, with a frequency of less than 0.1% of all breast cancers[1)2)]. The first report in Japan was by Ayabe et al in 1974, and to the best of our knowledge, there have been only 70 cases reported to date.

ACC of the breast occurs below or near the areola, and it is often palpated as a spherical, easily movable mass. Pain that corresponds to the mass is considered to be a clinical characteristic and was also present in the present patient. Histological perineural invasion has been suggested as the cause of the pain[5].

ACC has few characteristic imaging findings, and a definitive diagnosis is difficult with preoperative diagnostic imaging alone[6]. On both mammography and ultrasound images, it is often detected as a well-defined tumor shadow; similar findings were present in the present case.

Histopathologically, adenoid cystic carcinoma that occurs in the mammary glands has the same histological features as that which affects the salivary glands. Cell nests of irregular size invade the interstitium with relative diffuseness. These cell nests may show ductal to cystic shapes, solid structure, and cord-like arrangements, and a very common characteristic is an epithelial cell arrangement as if surrounding the interstitium. Fairly large cell nests that show a cribriform structure at first glance are well-known, but they consist of true glandular lumina and pseudocysts (adenoid cystic pattern). The internal parts of the true glandular lumina are positive with PAS staining, and the mucus in the pseudocysts is positive with Alcian blue staining. The tumors consist of two kinds of cells, small glandular epithelial cells with round nuclei and oval to spindle-shaped myoepithelial cells in which pyknosis is seen. This is called a biphasic pattern. Ro et al[7], based on the proportion of the solid portion in the entire tumor, classified tumors in

which almost no solid portion are seen as grade I, those with $<30\%$ as grade II, and those with $\geq 30\%$ as grade III, and they reported that the likelihood of recurrence increases as the solid portion becomes larger. In the present case, the solid portion accounted for about two-thirds of the tumor, corresponding to grade III.

The treatment selected was surgical resection. Various operative procedures are reported, from lumpectomy to radical mastectomy, depending on tumor diameter and location, but in the present case, mastectomy was selected based on the fact that the lesion was under the nipple. Kontos et al[8] stated that axillary lymph node dissection could be omitted, and reports of lymph node metastasis are also rare in Japan[3)9)10)].

ACC is generally thought to be a breast cancer with a relatively good prognosis, but there are also reported cases of metastatic recurrence[11)]. In addition, many patients are triple-negative, that is, both hormone receptor and HER2-negative, for which chemotherapy is indicated in the guidelines. However, in the 13th Saint Gallen IBCC 2013 consensus, adjuvant chemotherapy is not recommended for ACC if it is node-negative[12)]. Therefore, the recurrence risk in the present case was considered low and judged that anthracyclines and taxanes were unnecessary as adjuvant therapy. There is still no standard treatment for ACC, so appropriate follow-up of such cases is needed.

The authors have no conflicts of interest to disclose.

References

1) **Rosen PP, Oberman HA** : INVASIVE CARCINOMA Tumors of the Mammary Gland, 3rd ed, pp219–223, Armed Forces Institute of Pathology, Washington D.C. (1993)
2) **Page DL, Anderson TJ**: Uncommon types of invasive carcinoma Diagnostic Histopathology of the Breast, pp 241–243, Churchill Livingstone, New York (1987)
3) **Aoyama E, Sakamoto G, Akiyama F et al**: Clinicopathological study of adenoid cystic carcinoma of the breast. Jpn J Breast Cancer **14**: 378–382, 1999
4) **Ishige T, Kaneko T**: Carcinoma of major salivary glands: a study of parotid and submandibular gland carcinomas in 1418 primary cases. J Jpn Soc Cancer Ther **27**: 1890–1895, 1992
5) **Anthony PP, James PD**: Adenoid cystic carcinoma of the breast: prevalence, diagnostic criteria, and histogenesis. J Clin Pathol **28**: 647–655, 1975
6) **Okamoto Y, Sumiyama Y, Arima Y et al**: A case of adenoid cystic carcinoma (ACC) of the breast and review of the utility of preoperative imaging diagnose. Breast Cancer **8**: 84–89, 2001
7) **Ro JY, Silva EG, Gallager HS**: Adenoid cystic carcinoma of the breast. Hum Pathol **18**: 1276–1281, 1987
8) **Kontos M, Fentiman IS**: Adenoid cystic carcinoma of the breast. Int J Clin Pract **57**: 669–672, 2003
9) **Takao S, Sakamoto G, Akiyama F et al**: Adenoid cystic carcinoma of the breast—two cases with axillary lymph node metastasis—. Jpn J Breast Cancer **13**: 627–632, 1998
10) **Fukada I, Oyama M, Yamaguchi K et al**: A case of mammary adempod cystic carcinoma with axillary lymph node metastasis. J JPN Surg Assoc **69**: 2458–2489, 2008
11) **Suwa K, Yoshida M, Koizumi K et al**: Adenoid cystic carcinoma of the breast-two cases with local recurrence and distant metastasis. Jpn J Breast Cancer **23**: 289–297, 2008
12) **Goldhirsch A, Winer EP, Coates AS et al**: Personalizing the treatment of women with early breast cancer: highlights of the St Gallen International Expert Consensus on the Primary Therapy of Early Breast Cancer 2013. Ann Oncol **24**: 2206–2223, 2013

乳腺腺様嚢胞癌の１例

[1]東京女子医科大学医学部外科学（第２）講座
[2]東京女子医科大学医学部病理学（第二）講座
神尾　英則[1]・神尾　孝子[1]・三浦　弘子[1]・産形麻美子[1]
野口英一郎[1]・大地　哲也[1]・本田　一穂[2]・亀岡　信悟[1]

乳腺原発の腺様嚢胞癌の１例を経験したので，若干の文献的考察を加え報告する．症例は71歳女性．検診の乳腺超音波検査で左乳房乳頭直下やや外側下方に腫瘤を指摘され，精査目的に当科紹介となった．針組織生検で腺様嚢胞癌と診断され，乳房切除およびセンチネルリンパ節生検を施行した．病理組織所見では，間質を囲むように様々な大きさの胞巣が，篩状構造や充実性構造を呈するように存在した．胞巣には真の腺腔と偽嚢胞が認められ，いわゆるadenoid cystic patternを呈していた．腫瘍細胞は小さく，核異型度は弱く，脈管侵襲は認めなかった．腺様嚢胞癌は一般的に比較的予後良好とされているが，予後不良とされるトリプルネガティブ乳癌を呈する症例が多く，適切な経過観察が必要と考える．