Human Pathology: Case Reports 10 (2017) 81–84

Contents lists available at ScienceDirect

Human Pathology: Case Reports

journal homepage: http://www.humanpathologycasereports.com

Case Report

Invasive ductal carcinoma ex pleomorphic adenoma of the lacrimal gland - a long term follow-up case

Naoko Nambu [a,b], Yoshitane Tsukamoto [a,c,*], Hiromi Tsuji [d], Takahiro Watanabe [a], Ryohei Shigehara [b], Masao Kakibuchi [b], Eiichi Morii [e], Seiichi Hirota [a]

[a] Department of Surgical Pathology, Hyogo College of Medicine, 1-1 Mukogawa-cho, Nishinomiya 663-8501, Japan
[b] Department of Plastic Surgery, Hyogo College of Medicine, Nishinomiya, Japan
[c] Department of Pathology and Laboratory Medicine, Takarazuka City Hospital, 4-5-1 Kohama, Hyogo, Takarazuka 665-0827, Japan
[d] Department of Pathology, Osaka Police Hospital, 10-31 Kitayama-cho, Tennouji-ku, Osaka 543-0035, Japan
[e] Department of Pathology, Graduate School of Medicine, Osaka University, Yamada-oka, 2-2, Suita 565-0871, Japan

ARTICLE INFO

Article history:
Received 22 March 2017
Received in revised form 11 June 2017
Accepted 5 July 2017
Available online xxxx

Keywords:
Lacrimal gland
Carcinoma ex pleomorphic adenoma
Androgen receptor
HER2

ABSTRACT

We experienced a case of malignant orbital tumor in a 72-year-old Japanese man. He noticed protrusion of his left eye, and received resection of the left orbital tumor. The tumor contained several different components such as high-grade invasive ductal carcinoma, low-grade/minimally invasive adenocarcinoma and pleomorphic adenoma. Pathological diagnosis of high-grade invasive ductal carcinoma ex pleomorphic adenoma of the left lacrimal gland was made. He had undergone surgical removal of the left lacrimal gland tumor at the other hospital 19 years before, and the surgical specimen revealed that most part of the tumor was pleomorphic adenoma but low-grade/minimally invasive adenocarcinoma was included as a minor component (low-grade/minimally invasive adenocarcinoma ex pleomorphic adenoma). Thus, we could observe the natural course of low-grade/minimally invasive adenocarcinoma ex pleomorphic adenoma which transformed into high-grade invasive ductal carcinoma ex pleomorphic adenoma. Lacrimal gland ductal carcinoma is an extremely rare tumor, and only 25 cases have been reported before in English literature. Moreover, our case is the 5th case of lacrimal gland ductal carcinoma ex pleomorphic adenoma.

1. Introduction

Lacrimal gland ductal carcinoma (LGDC) was first described by Katz et al. as a rare high-grade lacrimal gland malignancy with striking histological and immunohistochemical similarities to salivary duct carcinoma (SDC) or ductal carcinoma of the breast [1]. In fact, types of epithelial tumors of the lacrimal gland are similar to those of the salivary gland [2]. In epithelial lacrimal gland tumors, pleomorphic adenoma (PA) is the most common one (48%), adenoid cystic carcinoma the second one (32%), carcinoma ex PA (Ca-ex-PA) the third one (8%), and pure LGDC the forth one (2%) [2]. In Ca-ex-PA, malignant components show morphological varieties including ductal carcinoma. As reported in SDCs or ductal carcinomas of the breast, LGDC component may show amplification of human epidermal growth factor receptor type 2 (*HER2*) gene and overexpression of HER2 protein. Moreover, LGDC component is frequently positive for androgen receptor (AR) as observed in SDCs [3]. Here, we report a very rare case of high-grade invasive LGDC-ex-PA.

2. Case report

A 72-year-old man complaining of left exophthalmos went to the Department of Plastic Surgery, Hyogo College of Medicine. He claimed a past history of operation for left orbital tumor at the other hospital 19 year before. Brain magnetic resonance imaging (MRI) showed a left orbital mass 43 × 30 × 25 mm in size (Fig. 1A–D) pushing the left eye anteriorly. Left orbital exenteration and the removal of left side of nasal bone, sphenoid bone and upper portion of maxilla were performed (Fig. 1E). For the positive margins, additional radiation therapy was performed. We also tried to obtain the clinical information and pathological specimens of the first operation from the other hospital.

* Corresponding author.
E-mail addresses: na-nambu@hyo-med.ac.jp (N. Nambu), tsuka-y@hyo-med.ac.jp (Y. Tsukamoto), ta-watanabe@hyo-med.ac.jp (T. Watanabe), mkaki@hyo-med.ac.jp (M. Kakibuchi), morii@molpath.med.osaka-u.ac.jp (E. Morii), hiros@hyo-med.ac.jp (S. Hirota).

http://dx.doi.org/10.1016/j.ehpc.2017.07.001

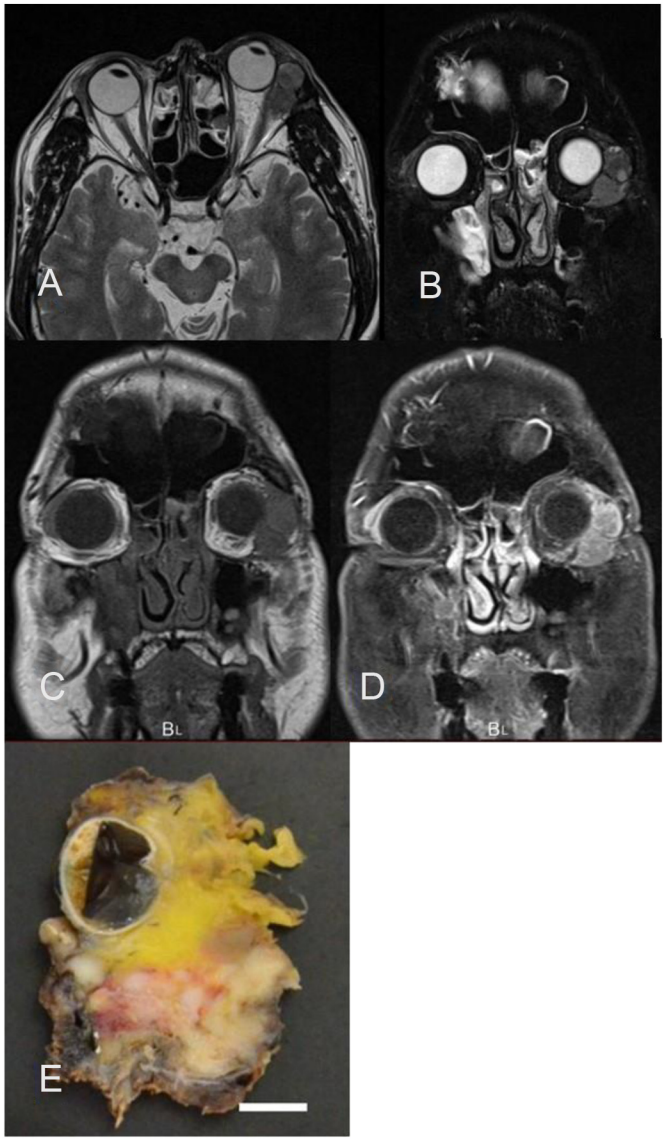

Fig. 1. Brain MRI shows that a mass is present in the left orbit (33 × 26 × 20 mm) and the mass pushes the left eye anteriorly. Fig. 1A shows the T2 axial view and Fig. 1B shows the T2 coronal view. Fig. 1D & C show T1 images with/without gadolinium enhancement. Fig. 1E shows the sagittal section of the surgical specimen. In Fig. 1E, the right and left sides indicate posterior and anterior orientation, respectively. Macroscopically, the mass massively invades into the left maxillary sinus. A white bar in Fig. 1E indicates 1 cm.

3. Materials and methods

Resected tissues were fixed in 10% buffered formalin and embedded in paraffin. We also received the paraffin blocks of the previously resected tissue from the other hospital. Three-micrometer-thick sections were cut and stained with hematoxylin and eosin. Immunohistochemistry (IHC) for estrogen receptor (ER) (clone 6F11, Leica, Wetzler, Germany, 1:400), progesterone receptor (PgR) (clone 16, Leica, 1:1000), AR (AR441, DAKO, Glostrup, Denmark, 1:100), Ki-67 (MIB-1, DAKO, 1:300), GCDFP-15 (SIG-3611-16, Funakoshi, Tokyo, Japan, 1:40) and p53 (DO-7, BIOCARE MEDICAL, Pike Lane, Concord, CA, 1:2) was performed using Bond Polymer Refine Detection (Leica). IHC for HER2 was performed using BOND Oracle HER2 IHC System (Leica). *HER2* gene amplification was evaluated by HER2-fluorescent in situ hybridization (HER2-FISH) using Histra HER2-FISH Kit (JOKOH, Tokyo, Japan). Cases of LGDC were searched for in PubMed using terms “lacrimal gland” and “ductal carcinoma”. The staging of our case was evaluated by American Joint Committee on Cancer (AJCC) Cancer Staging Manual 8th edition [4].

4. Results

4.1. Histology of the specimen resected at the other hospital 19 years before

The specimen resected at the other hospital 19 years before was examined. At that time, the tumor was diagnosed as PA and neither marginal evaluation nor additional resection was performed. Reevaluation of the specimen revealed that most part of the tumor was PA (Fig. 2A; right lower half) but low-grade/minimally invasive adenocarcinoma was observed as a minor component (Fig. 2A; left upper half and B). Thus, the tumor was retrospectively diagnosed as low-grade/minimally invasive adenocarcinoma-ex-PA. High-grade invasive ductal carcinoma (IDC) was not detected. Retrospective IHC showed that both ER and PgR were negative in both components. A part of the tumor cells of low-grade/minimally invasive adenocarcinoma component were positive for p53, while those of PA component were barely positive (data not shown). Although weakly positive signals for AR were observed in low-grade/minimally invasive adenocarcinoma (Fig. 2C; left upper half), PA did not have apparent signals (Fig. 2C; right lower half). IHC did not show apparent HER2 expression (Fig. 2D), and no amplification of *HER2* was detected in both components (data not shown).

4.2. Histology of the specimen resected at Hyogo College of Medicine

The pathological examination of the second operation at Hyogo College of Medicine revealed that the tumor consisted of three components such as PA (Fig. 3A; right lower quadrant), low-grade/minimally invasive adenocarcinoma (Fig. 3A; right upper quadrant) and high-grade invasive ductal carcinoma (IDC) (Fig. 3A; left half). Area of the PA component was narrow and the normal lacrimal gland tissue was not detected. Comedonecrosis was seen in high-grade IDC (Fig. 3D). We pathologically diagnosed that the tumor is high-grade IDC-ex-PA derived from the left lacrimal gland. Although AR is strongly positive in high-grade IDC (Fig. 3B; left half) and weakly positive in low grade/minimally invasive adenocarcinoma (Fig. 3B; right upper quadrant), no

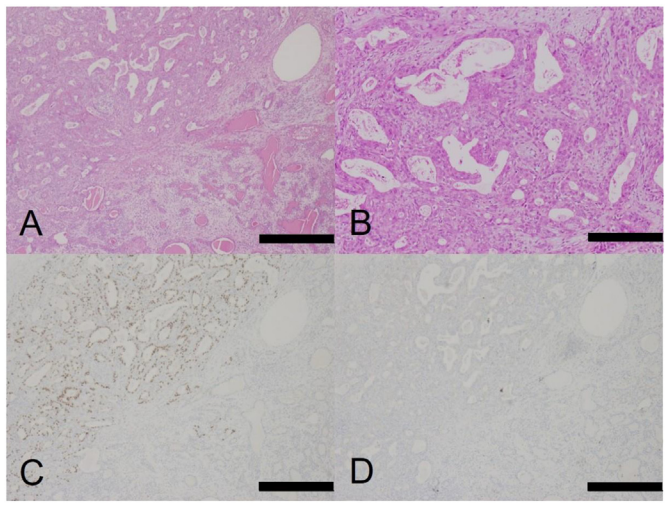

Fig. 2. The pathological findings of the other hospital 19 years before are shown. The specimen shows low-grade/minimally invasive adenocarcinoma ex PA. It showed that most part of the tumor was PA (Fig. 2A; right lower half) but low-grade/minimally invasive adenocarcinoma was observed as a minor component (Fig. 2A; left upper half and 2B; higher magnification). Although weakly positive signal for AR was observed in low-grade/minimally invasive adenocarcinoma component (Fig. 2C; left upper half), PA did not show apparent signal (Fig. 2C; right lower half). IHC did not show apparent HER2 expression (Fig. 2D). Bars in Fig. 2A, C and D indicate 500 μm and a bar in Fig. 2B indicates 200 μm.