

⟨Brief Note⟩

A case of simultaneous occurrence of double cancer (tongue cancer and breast cancer) as two separate primary tumor

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Summary We encountered a patient with tongue cancer, which develops at the highest incidence among oral cancers, metastasized to the cervical lymph node and breast cancer concomitantly developed. In this study, we report the case along with a literature review.

Key words: Tongue cancer, Breast cancer, Immunohistochemical stain, HER-2, hormone receptor

1. Introduction

The incidence of double cancer is increasing. Regarding oral squamous cell carcinoma, the incidence of double cancer with cancer of the upper gastrointestinal tract is high, and patients with cancer in various organs have also been reported¹. In contrast, cervical lymph node metastasis of oral cancer in a state of double cancer with breast cancer has not been reported.

2. Patient and Methods

Written informed consent was obtained from

volunteer, and our study was in compliance with the rules for human experimentation at our institution.

Case report

The patient was an 80-year-old woman with a medical history of hyperlipidemia and hypertension.

Past history

She was receiving outpatient treatment for hyperlipidemia and hypertension at an internal medical clinic.

History of present illness

Pain developed at the left margin of the tongue in March 2014 and the patient visited a dental clinic

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Received for publication: Aug 1, 2018

Accepted for publication: Nov 1, 2018

on April 22. Tongue cancer was detected and she was referred to the Oral Surgery Department of our hospital.

On April 22 of the same year, histological examination by biopsy of the region was performed (well-differentiated squamous cell carcinoma). Cervical lymph node swelling was noted on preoperative physical examination, and aspiration biopsy cytology was performed on May 7 (squamous cell carcinoma).

Left partial glossectomy and left cervical lymph node dissection were performed on May 16.

Moreover, a breast mass was detected on preoperative positron emission tomography (PET), and aspiration biopsy cytology was performed on May 7 (on the same day as lymph node ABC). The histological diagnosis was solid-tubular carcinoma. The patient was examined for surgery of the breast cancer at our department on June 10, admitted on June 21, and underwent surgery on June 25.

The patient died of multiple liver metastasis of breast cancer on May 1, 2015.

Methods

The biopsy aspirate metastasis of cervical lymph node with tongue cancer and that of the mammary gland.

The aspirates were processed employing the liquid-based cytology (LBC) method. Portions of the specimens were subjected to immunohistochemical staining.

The monoclonal antibodies used were HER-2(1 : 50, Biocare medical, Tokyo ,Japan) and hormone receptor (1 : 50, Nichirei, Tokyo, Japan).

The lymph node aspirate was processed using Prep of Muto Pure Chemicals in a sampling container exclusive for LBC. The mammary gland aspirate was processed using the standard method.

The aspirate of the cervical lymph node with tongue cancer metastasis was transferred into the LBC-exclusive sampling container was mixed and fixed for 30 minutes or longer. The container was centrifuged (600 G, 2,000 rpm) for 5 minutes, and the supernatant was discarded and CytoCollect solution for LBC was drained off well.

After discarding the supernatant, 5 mL of distilled water was added.

Then, 5 mL of distilled water was added to the precipitate to resuspend cells.

A slide glass was set in the lid of the LBC-exclusive container and the lid was closed.

A slide glass was set in the lid.

After setting, the container was inverted and kept standing for about 5 minutes.

The slide glass was removed from the lid, fixed in conventional 95% ethanol, and subjected to Papanicolaou staining. Immunohistochemical staining was performed with the avidin-biotin peroxidase complex (ABC) method². Light counterstaining of nuclei was performed with Mayer's hematoxylin.

Results

The N/C ratio of squamous cell carcinoma cells in the tongue cancer was not so high on cytology, and the cytoplasm was orangeophilic (Fig. 1). No cancer pearl or tadpole-shaped cell suggesting well-differentiated squamous cell carcinoma was noted. The karyotype was irregular and the chromatin was coarse and granular. In the biopsy specimens, features of well-differentiated squamous cell carcinoma (Fig. 2), such as the cancer pearl, were observed. In the mammary gland fine-needle aspirate, cells formed aggregates. The tumor cells were small and N/C was high (Fig. 3). The histological diagnosis was solid-tubular carcinoma (Fig. 4). On

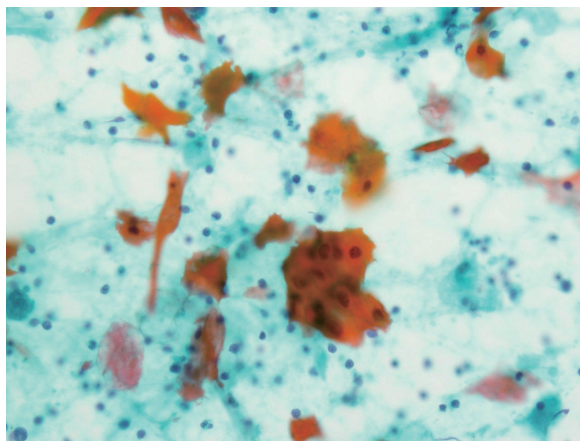


Fig. 1 Lymph node in aspiration cytology. Tumor cells is noted keratinized cells with intense orangeophilia. Papanicolaou stain x 40

immunohistochemical staining, ER was positive (Fig. 5), and PGR (Fig. 6) and HER-2 (Fig. 7) were negative.

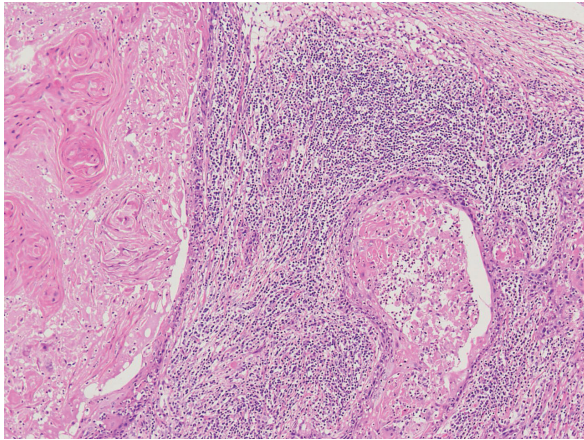


Fig. 2 Lymph node metastasized tongue cancer. Note pearl formation with keratinization. H & E stain x 20

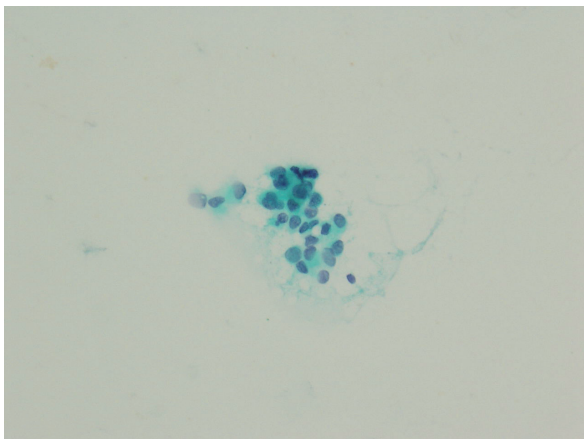


Fig. 3 A cluster of solid-tubular carcinoma of the mammary gland in aspiration cytology. Papnicolaou stain x 20

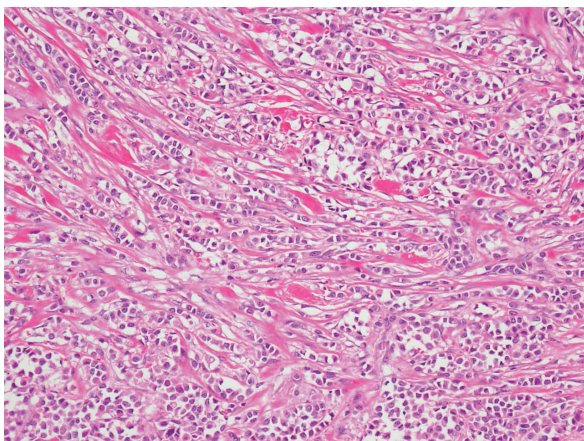


Fig. 4 The tumor cells shows an enhancement-related hyperplasia. Fibrosis is clear. H & E stain x 20

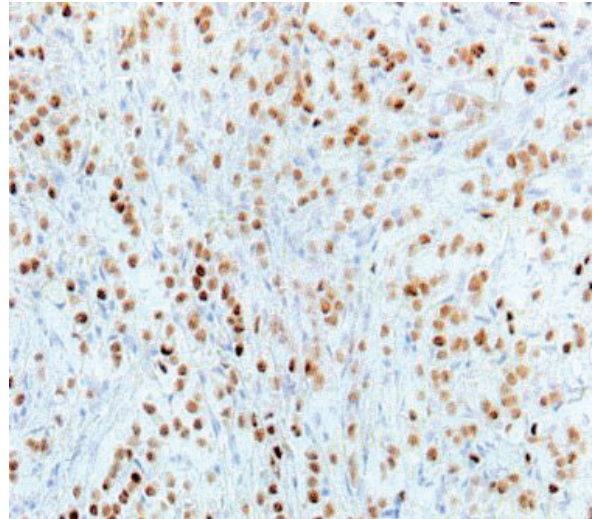


Fig. 5 Note the positive nuclear staining with the ER antibody. ABC method x 20

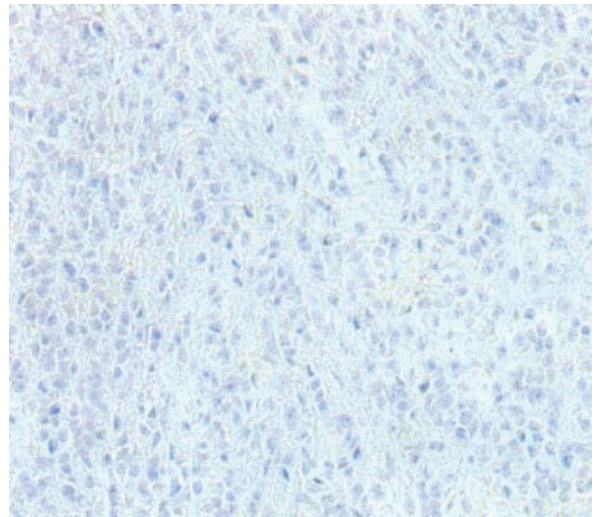


Fig. 6 Note the negative nuclear staining with the PGR antibody. ABC method x 20

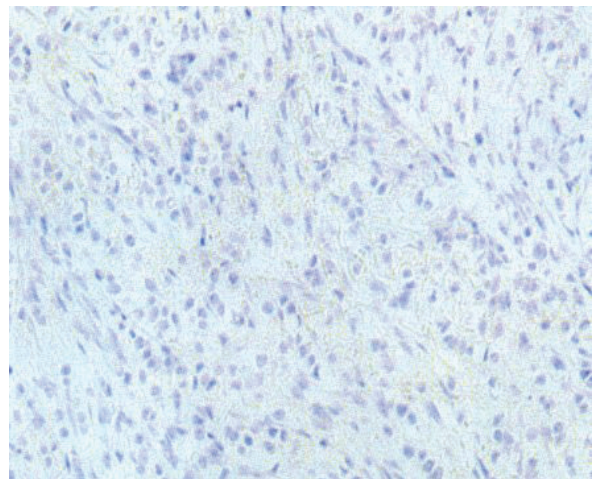


Fig. 4 Note the negative cell membrane staining with the HER-2 antibody. ABC method x 20

4. Discussion

According to Warren, S., and Gates, O, the definition of double cancer is as follows: each of the tumors must present a definite picture of malignancy, each must be distinct, and the probability of one being a metastasis of the other must be excluded. It also says that tumors with metastatic, thyroid cancer, skin cancer, myeloma, liver cancer, and teratomata have been excluded³.

Our case is a double cancer of tongue and breast, and a metastasis of tongue cancer is observed in the cervical lymph node. However, the tongue and breast cancer are coincident and complied with the definition of Warren, S., and Gates, O. In other words, tongue and breast cancer are malignant tumors generated in the individual organs. According to the paper of Warren, S., and Gates, O, the frequency of a double cancer in a breast cancer and other tumors, gastric cancer is the highest in 14 out of 63 cases (22. 2%), then the uterus in 13 out of 63 cases (20. 6%), followed by the rectum in 7 out of 63 cases (11. 1%), the cervix, ovaries, and colon. Incidentally, in the paper of Warren, S., and Gates, O, the combination of double cancer such as breast cancer and tongue cancer was not found. Therefore, this case can be said as a very rare case³.

The LBC method has recently been introduced into the cytology field (for endometrium, celomic fluid, and urinary organs)⁴. We prepared cell blocks from the residual fluid of fine-needle aspirates of the cervical lymph node with tongue cancer metastasis and mammary gland, but only a few cell components were present and the findings were insufficient. The morphology of squamous cell carcinoma developing in the oral region is different from that of those appearing in the sputum and gynecological region, and so careful handling is important to judge cells. Based on the findings of the present case, consideration of the interpretation, observation, and sampling methods of cells may be necessary.

We did not perform endoscopy in this case; however, in a previous report, although pathological abnormalities, such as precancerous lesions, were

observed in 169 of 570 patients examined by upper gastrointestinal endoscopy, no lesion was malignant⁵. In a prospective study involving 589 patients with head-and-neck cancer examined by PET-CT, double cancer was detected in 56 regions and 85% of synchronous double cancer cases could be detected by PET-CT⁶. A breast mass was also detected on preoperative PET in our patient, and its histological diagnosis by aspiration biopsy cytology was solid-tubular carcinoma.

Reportedly, the incidence of double cancer after oral cancer treatment is about 3.2%. To improve the therapeutic outcome of double cancer cases, the early discovery and treatment of cancer in another organ after oral cancer treatment are important¹.

Ethical guidelines

In order to use clinical specimens, this research is reviewed and approved by Fujita Health University Ethical Review Committee for Epidemiology and Clinical research.

Conflict of Interest

The authors declare no competing financial interests.

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