Mixed Type of Papillary Adenocarcinoma and Anaplastic Carcinoma of the Thyroid Gland

Report of an Autopsy Case

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(Received July 9, 1977)

INTRODUCTION

Anaplastic carcinoma of the thyroid gland is subclassified into spindle and giant cell type. Anaplastic carcinoma, which originates from pre-existing well differentiated thyroid carcinoma, rapidly infiltrates into adjacent tissues or metastases to many distal organs, and most patients die within one year after pathological diagnosis[1-3].

In this report, we describe a case of anaplastic carcinoma of the thyroid gland. A diagnosis of the papillary adenocarcinoma of the left maxillary sinus was made in 1971 and thereafter fibrosarcoma or leiomyosarcoma of the neck was suspected in 1972, but autopsy disclosed mixed type of the papillary adenocarcinoma and anaplastic carcinoma of the thyroid gland.

CASE REPORT

The patient, a 35-year-old man, was admitted because of left nasal obstruction and headache in July, 1971. He was found to have chronic sinusitis and deviated septum and histologic examination indicated the papillary adenocarcinoma in the left maxillary sinus. On the 15th hospital day, the exophthalmus, struma and swelling of the left cervical lymph nodes were noted. He discharged and was treated at the outpatient clinic. About ten months later, he had nasal obstruction and was diagnosed as having the recurrence of maxillary carcinoma with metastasis to the left cervical lymph nodes. He was readmitted in September, 1972. Tumor mass in the midline on the neck was noted and biopsy suggested fibrosarcoma or leiomyosarcoma. This tumor rapidly increased in size.

He was operated again but the complete removal of the cervical tumor was unsuccessful because of the adhesion of the mass with the subcutaneous tissue, muscle and trachea. He was given a radiation therapy over the cervical tumor. His general condition was gradually deteriorated and he died in December, 1972. Autopsy was performed about 6 hours after death.

BIOPSY FINDINGS

1) Mass of the left maxillary sinus.

Eosinophilic and cuboidal or columnar cells were increased along the fibrous connective tissue forming follicular pattern. Hemorrhage and destruction of the bone were noted (Fig. 1).

2) Cervicl tumor.

The tumor cells had eosinophilic and spindle shaped cytoplasm with spindle and hyperchromatic nuclei forming interlacing pattern (Fig. 2). In other areas, the cells which had oval nuclei with scarse chromatin and eosinophilic, indistinct cytoplasm, were closely arranged. These patterns were partially mixed. Mitoses were frequent, but giant cells were not observed. These area showed frequent foci of necrosis and hemorrhage.

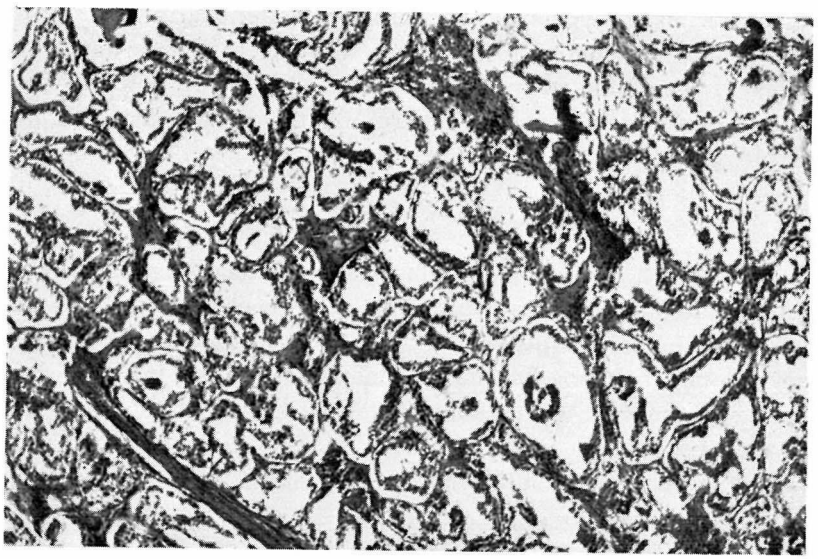

Fig. 1. Mass of maxillary sinus. Papillary adenocarcinoma. H.E. ×40.

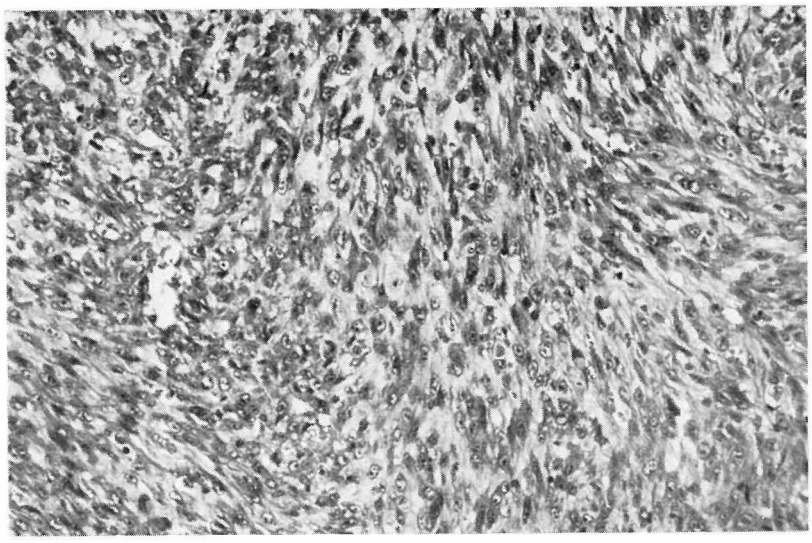

Fig. 2. Cervical tumor. Cells with spindle or oval nuclei proliferate interlacingly. H.E. ×100.

AUTOPSY FINDINGS

The adult's fist-sized and elastic hard tumor was recognized at the anterior cervical region. It spreaded from the thyroid cartilage to the middle region of anterior mediastinum and was adherent to the subcutaneous tissue, muscle and trachea. Cut surface was grayish-white and showed medullary appearance. The tracheal cartilage were destroyed and softened by the invasion of tumor but tracheal mucosa was not eroted or ulcerated. The esophagus was intact. Thyroid gland was almost completely replaced by the tumor mass and the cut surface showed medullary appearance, and normal colloidal figures was obscured.

In the left maxillary sinus, the reddish-black and adult's fist-sized tumor was noted. Although the left maxillary sinus and basis of skull was destroyed by the invasion of the tumor, the right maxillary sinus remained intact. In the middle of occipital region, there was a reddish-black and walnut-sized tumor which arose from the dura mater and invaded to the subcutaneous tissue. In both lungs, there were numerous tumors, which were rice grin to small-finger tip sized, yellowish-white and elastic hard in consistensy. The severe bronchopneumonia was noted.

Tumor mass was also noted in the left kidney, left parietal pleura and hilar and cervical lymph nodes.

The brain was 1380 g and the basis of the temporal lobe was softened by the compression of tumor.

HISTOPATHOLOGICAL FINDINGS

Microscopical examination of the tumor of thyroid gland revealed two distinct patterns. The one was composed of epithelial elements and the other showed sarcoma-like appearance. The former was made of the atypical epithelial cells which had eosinophilic and cuboidal or columnar cytoplasm with oval and hyperchromatic nuclei. These cells formed follicular pattern and partially arranged on fibrovascular connective tissue occasionally projecting into the cystic lumen. The stroma was frequently hyalinized, but calcification, psammoma bodies or amyloid were not present. In another area, tumor cells had large, bizarr and eosinopilic cytoplasm with oval and hyperchromatic nuclei. Among these cells, the multinuclear giant cells were frequently observed. Another pattern of sarcomatous area was composed of spindle-shaped cells arranged in parallel bundles. These cells in this portion had elongated or fusiform-shaped nuclei containing coarse chromatin, irregular nuclear membrane and distinct nucleoli. These cells were mixed in most of anaplastic areas (Fig. 3). From the upper dermis to the subcutaneous tissue, the spindle-shaped cells and multinucleated giant cells were noticed (Fig. 4). Transformation of these two patterns were noticed in many areas (Fig. 5). Several tumor cells were surrounded by the reticulin forming nests of various sizes.

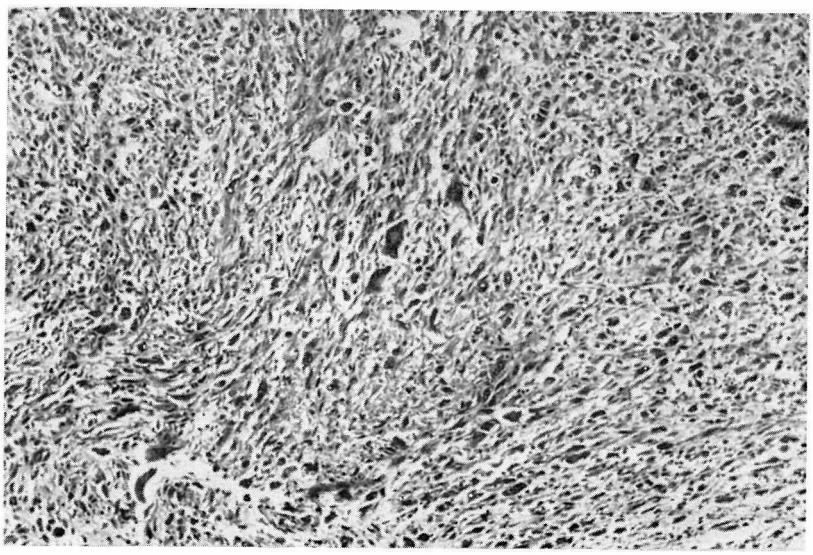

Fig. 3. Thyroid gland. Anaplastic area admixtured with spindle and multinucleated giant cells. H.E. ×40.

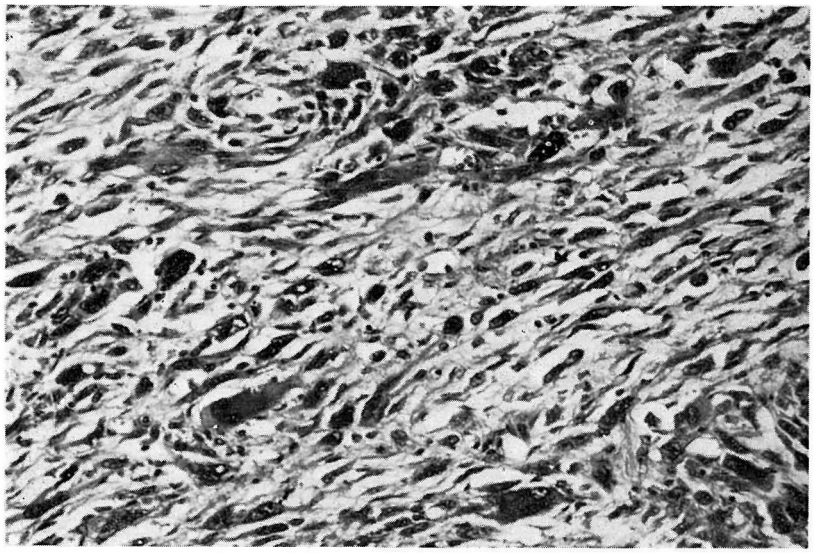

Fig. 4. Subcutaneous tissue of the neck. Anaplastic pattern combined with spindle and bizarr giant cells. H.E. ×100.

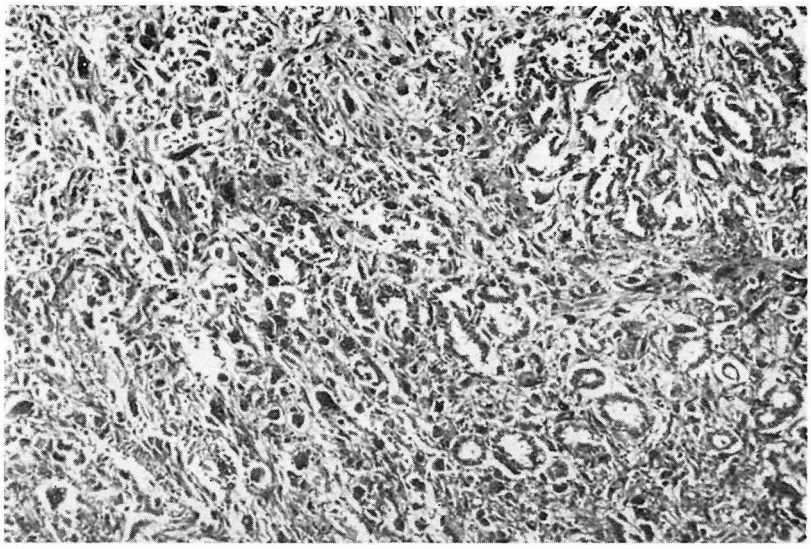

Fig. 5. Thyroid gland. Transitional area with a mixture of epithelial and anaplastic elements. H.E. ×40.

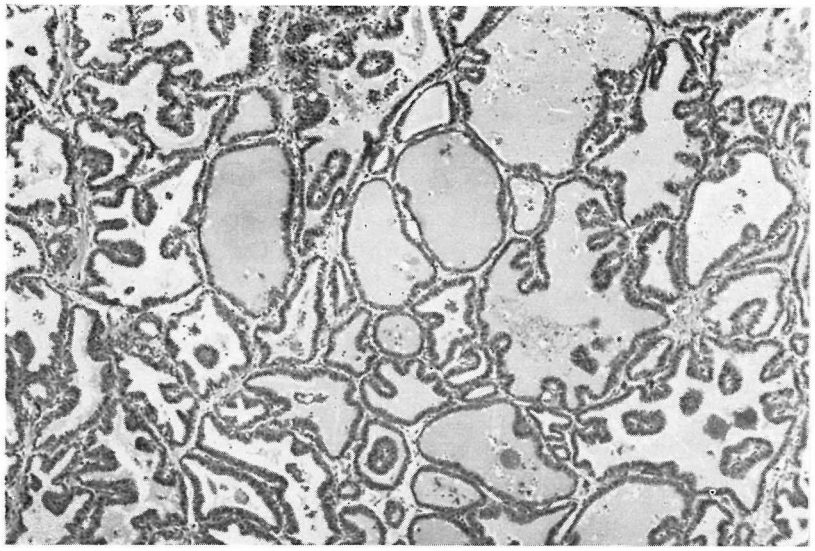

Fig. 6. Occipital tumor. Papillary adenocarcinoma containing colloidal materials. H.E. ×40.

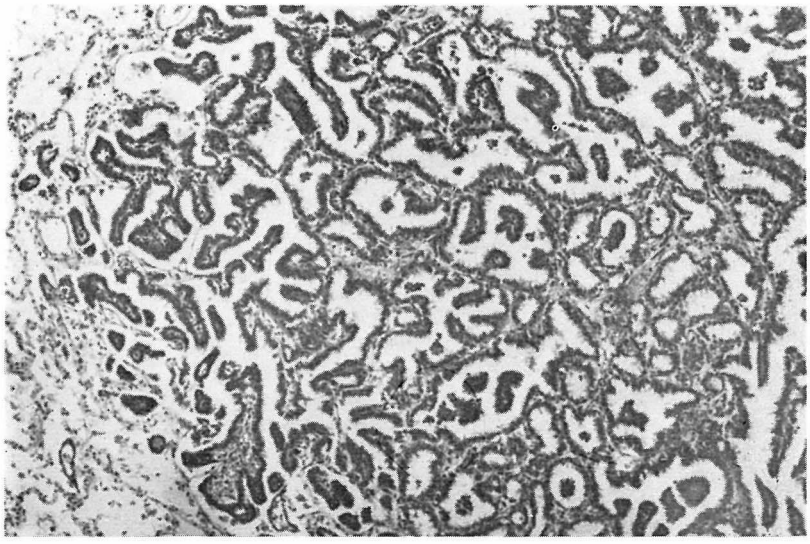

Fig. 7. Metastatic area of lung shows papillary adenocarcinoma. H.E. ×40.

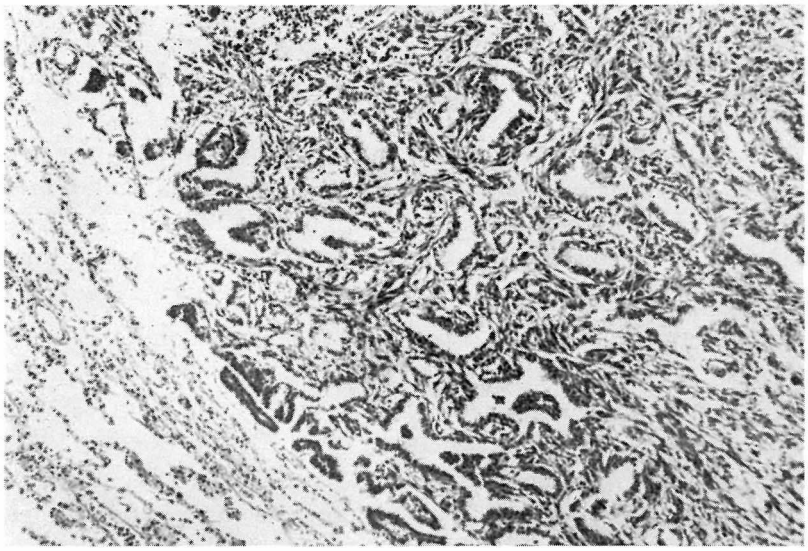

Fig. 8. Metastatic area of lung shows admixture of anaplastic and follicular patterns. H.E. ×40.

The tumor of the maxillary sinus and occipital lesion illustrated the typical papillary adenocarcinoma as had be seen in biopsy specimen. In some areas, the cells which had eosinophilic, cuboidal cytoplasm with round nuclei were arranged along the fibrovascular fine connective tissues. But in these portions, anaplastic pattern was not seen (Fig. 6).

In both lungs, numerous metastatic lesions were noticed. These lesions were composed of both papillary adenocarcinoma and anaplastic carcinoma (Figs. 7, 8). The severe aspiration pneumonia was observed.

The similar findings were noticed in the left kidney, soft tissue of the neck, adventitia of ascending aorta, occipital bone and hilar, mediastinal and cervical lymph nodes.

There was a softening at the basis of the temporal lobe and granular layers were sparse in the cerebellum.

The other organs showed no abnormal findings.

DISCUSSION

It is reported that anaplastic carcinoma is seen only in 16% of all the thyroid carcinoma[4]. The average age of the patients with papillary adenocarcinoma are less than 40 at the time of diagnosis while anaplastic carcinoma arises in older patients with the average age of 66[3]. Survival after diagnosis of anaplastic carcinoma is ranged from 4 weeks

to 3 years. Wychulis et al.[5] reported that 66.7% of the patients with anaplastic carcinoma died within one year after diagnosis, while Woolner[3] mentioned that 61.3% died within 6 months and 77.3% within a year.

Many authors have reported that anaplastic carcinoma arise from pre-existing follicular or papillary adenocarcinoma as a mutation of either the primary lesion or metastatic foci or both[1,4,6-8]. In this case, the anaplastic carcinoma rapidly increased in size about 1 year after paillary adenocarcinoma of the left maxillary sinus and goiter were noted.

Microscopically, anaplastic carcinoma described herein was accompanied with sarcoma-like lesions. Nishiyama et al.[7] described 53 cases with or without sarcoma-like stromal reaction and in their cases malignant changes of the stroma in the tumor could not be denied. If both the epithelial and stromal components were malignant, the most accurate name would be a carcinosarcoma. A diagnosis of carcinosarcoma of the thyroid gland is established when the tumor, both at its primary sites and in metastatic lesions, exhibits a distinctly sarcomatous and carcinomatous pattern. Although these two patterns were admixtured in many areas, no transition could be demonstrated between one and the other of two elements. In the sarcomatous portion, the reticulin stain usually reveals a rich intercellular network of reticulin fibers among individual cells[1,9]. However, Ueda and Furth[10] demonstrated experimentally in mice that epithelial tumors became transformed into pure sarcomatous growth with or without giant cells and they resembled the so-called spindle-cell and giant-cell carcinoma arising in the human thyroid.

We diagnosed this case as papillary adenocarcinoma with anaplastic carcinoma or mixed type of well differentiated and undifferentiated carcinoma. This diagnosis is based on the following findings: 1) mixture of well differentiated adenocarcinoma and anaplastic carcinoma, 2) transition between the epithelial elments and non-epithelial elements, and 3) the pattern of reticulin surrounding the several tumor cells.

Metastasis of thyroid carcinoma is seen most frequently in the lung, regional lymph nodes, mediastinal lymph nodes, kidneys, brain and bones[7]. The most frequent metastatic sites of bone are the rib, sternum, skull, pelvis and vertebral columna[11]. Metastasis from thyroid carcinoma to the antero-superior mediastinum are potentially life-threatening because of eventual infiltration into adjacent trachea and around major vessles or conceivably as a source for hematogenous metastases to distant locations[12]. The metastatic tumors to the nose, paranasal sinuses and upper jaw are comparatively rare. In order of frequency, metastatic

tumors of the paranasal sinuses are from the kidney, bronchus, urogenital ridge, female brest and gastrointestinal tract. Other sites of origin include thyroid, pancreas, adrenal neuroblastoma and melanoma of the skin. The maxillary, ethomoid, frontal sinuses and nasal cavity are involved in decreasing order[13]. In papillary adenocarcinoma of thyroid, occult type has been reported by some authors[3,14]. In these cases, metastases are seen in regional lymph nodes, although there are no palpable mass in the thyroid. In this case, when the goiter was noted, metastasis of papillary adenocarcinoma was noticed in the regional lymph nodes and left maxillary sinus. Because of this metastatic sites, chief complaints of this patient were nasal obstruction and headache.

SUMMARY

An autopsy case of thyroid carcinoma of mixed type of anaplastic carcinoma and papillary adenocarcinoma is reported. Clinical course and histopathological findings were characterized by the following. Anaplastic carcinoma rapidly increased in size after the diagnosis of maxillary papillary adenocarcinoma which was considered to be metastasized from thyroid carcinoma. Histopathologically, the mixture of epithelial and sarcomatous elements were noticed and transition between epithelial and sarcomatous elements were observed in the thyroid gland.

The anaplastic carcinoma of thyroid gland simulates leiomyosarcoma, fibrosarcoma and rhabdomyosarcoma, and sarcoma of the neck must be differentiated from anaplastic carcinoma of the thyroid.

ACKNOWLEDGMENT

We thank Iwao Hosoda, Shimane Central Hospital for his allowing us to use the clinical data and Noboru Matsumoto, Yamaguchi Univ. School of Medicine for his kind guidance and careful review of the manuscript.

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