

Basaloid Squamous Cell Carcinoma of the Esophagus: Report of Two Cases

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Abstract

Basaloid squamous cell carcinoma is an uncommon malignancy of the esophagus. We present two cases of basaloid squamous carcinoma of the esophagus. Both tumors histologically consisted of solid cell nests and displayed focal immunoreactivity for type IV collagen. The nests comprised pseudoglandular structures containing myxoid matrix. Transthoracic esophagectomy with lymph node dissection was performed in both patients. The patients had uneventful postoperative courses. One patient showed no evidence of recurrence or metastasis in the 6-month postoperative period, and the other patient died of lung metastasis 28 months after the primary treatment.

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Key words: basaloid squamous cell carcinoma, esophagus, operation

Introduction

Basaloid squamous cell carcinoma (BSC) is a rare histological tumor type that was first described by Wain et al. in 1986 and which occurs predominantly in the upper respiratory and digestive tracts¹. However, BSC of the esophagus is a rare tumor, accounting for only 0.068% to 4.0% of all esophageal carcinomas^{2–4}, and, to date, only 60 cases of esophageal BSC have been reported in Japan⁵.

BSC is characterized by a poor degree of differentiation, high proliferative activity⁶, high biological malignancy^{3,7,8}, high incidence of distant metastases, and a high rate of spontaneous apoptosis^{6,7}. In general, BSC of the esophagus has a poor prognosis; however, a recent report has

suggested that the prognosis after curative resection might not differ significantly from that of typical squamous cell carcinoma^{3,6–8}. Herein, we report two cases of esophageal BSC that were treated with curative resection.

Case 1

A 61-year-old man was admitted to our department because of an abnormality of the esophagus detected on esophagography during a medical checkup. Physical examination revealed no abnormalities, and the laboratory data were also within normal limits, except for elevation of serum squamous cell carcinoma (SCC) antigen level (1.7 ng/mL). Esophagography showed a protruding lesion 5.0 cm in diameter with a nodular surface in the

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Fig. 1 The esophagogram shows a protruding, 8.0-cm-diameter lesion with a nodular surface at the posterior side of the middle esophagus.

posterior wall of the middle third of the esophagus (**Fig. 1**). Upper gastrointestinal endoscopy showed a tumorous lesion occupying approximately half of the esophageal lumen, located 25 cm from the incisors (**Fig. 2A, B**). The tumor was reddish, with an indistinct margin. Endoscopic ultrasonography revealed that the tumor was a semicircumferential lesion and suggested that the tumor might have invaded the muscularis propria (**Fig. 2C**). Histological examination of biopsy specimens from the tumor surface suggested poorly differentiated SCC. Computed tomography revealed a thickening of the esophageal wall but no evidence of invasion to the surrounding organs.

After admission, curative resection with transthoracic esophagectomy and lymphatic dissection of the neck, mediastinum, and abdomen was performed, followed by cervical esophagogastrostomy with a gastric tube pulled via the retromediastinal route. Grossly, the tumor had

an infiltrative, cauliflower-like appearance. It measured 45 × 35 mm and was located in the middle third of the thoracic esophagus. Microscopic examination of the tumor showed severely atypical basaloid cells arranged in solid nests. Imperfect peripheral palisading of tumor cells and primitive glandular structures were observed (**Fig. 3A, B**). The carcinoma had infiltrated the lamina propria until the deeper parts of the submucosal layer, and although the tumor strongly impinged on the muscularis propria, there was no evidence of invasion of this layer. The regional lymph nodes were negative for metastasis. Histochemical studies showed that the tumor cells expressed type IV collagen and were positive for periodic acid-Schiff staining but were not positive for chromogranin A, Elastica Masson Goldman (EMG), synaptophysin, or Congo red (**Fig. 3C, D**). The postoperative course was uneventful. No chemotherapy or radiotherapy was performed postoperatively, and the regular follow-up has revealed no evidence of recurrence or metastasis until the time of writing, 6 months after the surgery.

Case 2

A 60-year-old woman was admitted to our department because of an abnormality of the esophagus detected on esophagography during a medical checkup. Physical examination revealed no abnormalities, and the laboratory data were also within normal limits. Esophagography showed an irregularly shaped lesion 3.0 cm in diameter in the posterior wall of the middle of the esophagus (**Fig. 4**). Upper gastrointestinal endoscopy showed an ulcerated lesion that was located 25 cm from the incisors and was negative for iodine staining. Endoscopic ultrasonography suggested that the tumor might have partially invaded the muscularis propria. Histological examination of biopsy specimens of the tumor surface suggested poorly differentiated SCC. Computed tomography revealed no evidence of invasion or metastasis.

After admission, curative resection with transthoracic esophagectomy and lymphatic dissection of the neck, mediastinum, and abdomen

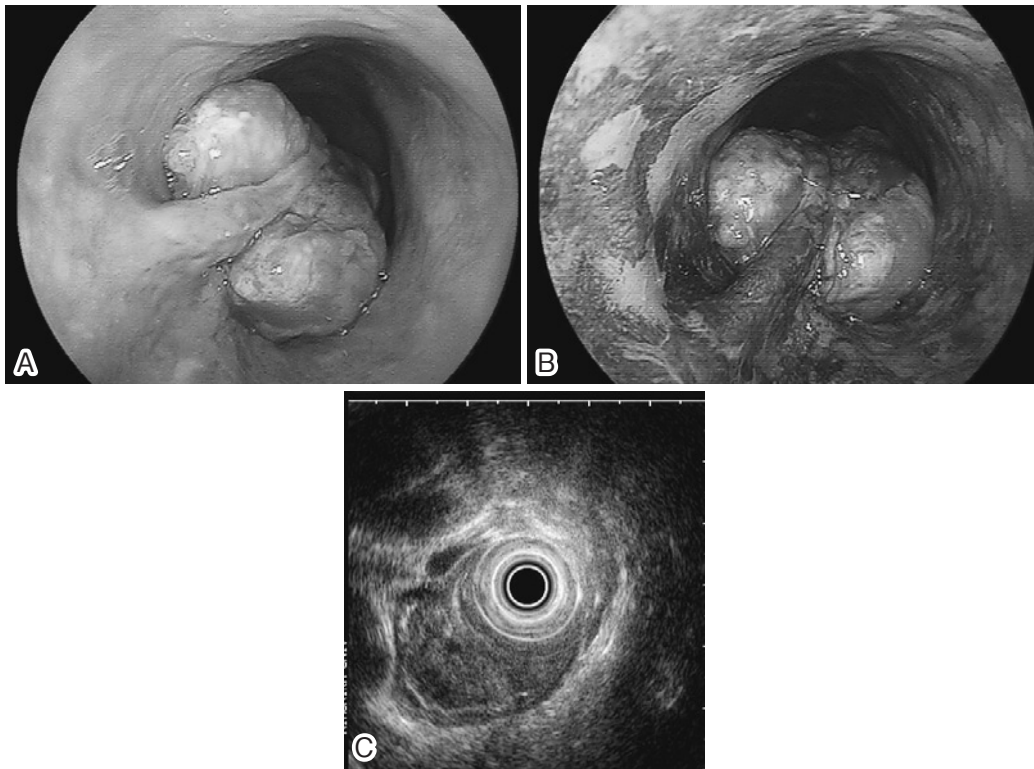


Fig. 2 Upper gastrointestinal endoscopy showed an elevated lesion 25 cm from the incisors which occluded the esophageal lumen (A). The tumor area on endoscopy is not stained with Lugol (B). Endoscopic ultrasonography showed the tumor occupying half of the esophageal lumen and suggested that the tumor had invaded the muscularis propria (C).

was performed, followed by cervical esophagogastrotomy with a gastric tube pulled via the retromediastinal route. The postoperative course was uneventful. The ulcerated tumor measured 21 × 20 mm and was located in the middle third of the esophagus (Fig. 5). Histologic examination showed that the tumor was composed of basaloid cells (Fig. 6A). The carcinoma had infiltrated the muscularis propria, and the regional lymph nodes were positive for metastasis. Basaloid components were immunohistochemically positive for type IV collagen and were stained with periodic acid-Schiff stain (Fig. 6B, C). The postoperative course was uneventful. No chemotherapy or radiotherapy was performed postoperatively. The patient died of lung metastasis 28 months after the primary treatment.

Discussion

BSC of the esophagus is a rare epithelial malignancy of the esophagus²⁻⁴. The epidemiological characteristics of BSC do not significantly differ

from those of SCC in that BSC also occurs predominantly in the middle third of the esophagus in men aged 60 years^{6,7}. The growth pattern of BSC is downward and expansive even at an early stage, and intraepithelial growth is rare⁵. On radiological examination, BSC is characterized by a smooth nodular surface and gentle lines representing the gutters between the nodules, differing in appearance from SCC⁹. Superficial BSC often assumes a form similar to that of submucosal tumors¹⁰, or the 0-I type tumors in the endoscopic classification based on the guidelines for Clinical and Pathological Studies of the Japanese Society for Esophageal Disease¹¹. Recently, magnifying endoscopy has become available at some institutions, and this modality is expected to contribute to the early diagnosis of BSC. Using magnifying endoscopy, Tomori et al reported avascular areas on the surface of BSCs corresponding to solid cell nests and unusual vessels surrounding the avascular areas corresponding to the vessels between the BSC nests, which may represent characteristic findings of BSC on

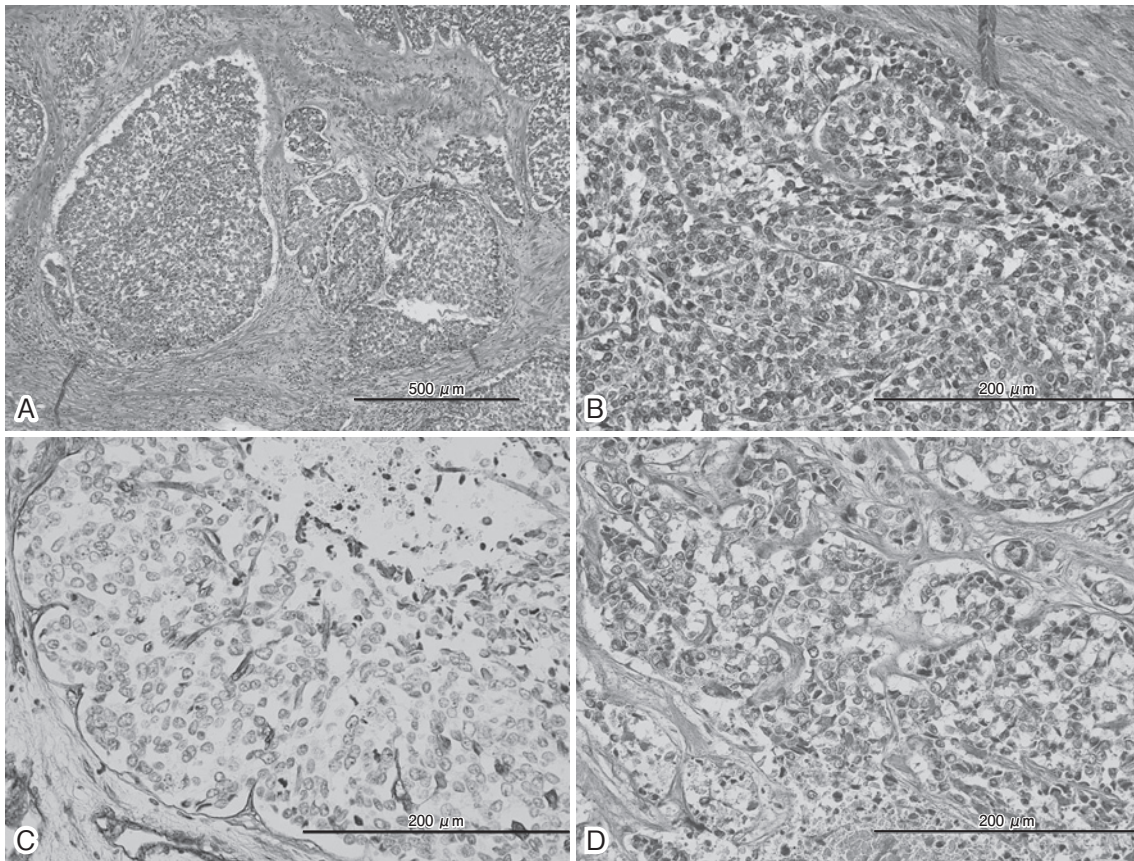


Fig. 3 Histologic examination showed that the tumor was composed of severely atypical basaloid cells arranged in solid nests. Imperfect peripheral palisading of tumor cells and primitive glandular structures were observed (A). Imperfect peripheral palisading of tumor cells and primitive glandular structures were observed (B). [The same sentence appears twice. Is this correct?] The basement membrane and hyaline deposits were positively for type IV collagen (C). Hyaline deposits in the stroma were stained with periodic acid-Schiff stain (D).

examination with this imaging modality¹². In the advanced stages, the tumors, frequently covered by normal epithelium, grow beneath the mucosa and are often ulcerated. Atypical basal cells may impinge and push in some areas and invade the underlying stroma in other areas, although the superficial cell layers usually have a normal morphologic appearance⁴. Establishing a diagnosis of BSC with preoperative biopsy is difficult^{5,7,13}, and the tumors are frequently diagnosed as poorly differentiated SCC. In our cases, the preoperative diagnoses were also poorly differentiated SCC; however, we eventually made the final diagnosis of BSC.

BSC is derived from the basal cells of the squamous epithelium; these cells might be pluripotent, based on immunoreactivity for cytokeratin subtypes^{2,4}. Wain et al. first described 10 cases of BSC of the upper respiratory and digestive

tracts and described the following characteristic histologic features¹: 1) solid growth of cells in a lobular configuration; 2) small, crowded cells with scant cytoplasm; 3) dark, hyperchromatic nuclei without nucleoli; 4) small cystic spaces containing material resembling mucin that stains positively with periodic acid-Schiff staining or Alcian blue or both; and 5) other occasional findings, including small and large foci of coagulation necrosis within the central areas of the tumor lobules, and the intimate association with SCC, dysplasia, or focal squamous differentiation. However, because of the histological similarities, these tumors have often been confused with adenoid cystic carcinoma (ACC), despite the significant differences in the epidemiological characteristics, including the female preponderance, earlier age of occurrence, more prolonged clinical course, myoepithelial differentiation and absence of



Fig. 4 The esophagogram showed an irregularly shaped, 3.0-cm-diameter lesion in the posterior wall of the middle of the esophagus (arrows).

association with SCC in the case of ACCs¹⁴⁻¹⁷. On the other hand, Kobayashi et al examined the histological features of 36 cases of BSC and reported that none of the cases showed the ACC (cribriform) pattern exclusively and that all contained, in various degrees, the heterogeneous components of BSC. Therefore, they suggested that ACC may represent a subtype of BSC showing differentiation toward the structure of the esophagus¹⁸. Considering these reports, the criteria for confirming the diagnosis of BSC of the esophagus are still being debated.

Immunohistochemical examination is useful for confirming the diagnosis of BSC^{3,6-8}. Increased expression of type IV collagen in the basement membrane is a common finding and indicates sufficient adhesibility¹⁹. Moreover, Takubo et al. have suggested that staining with antibodies against collagen and laminin is useful for identifying the basement membrane rich in these substances³. It has

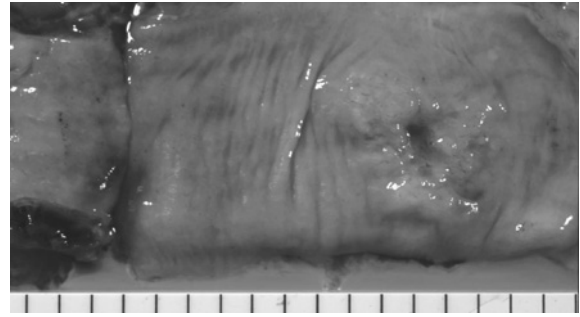


Fig. 5 The ulcerated tumor measured 21 × 20 mm and was located in the middle third of the esophagus.

also been reported that BSC has mucinous contents which are stained with periodic acid-Schiff stain. In our cases, immunoreactivity for type IV collagen and periodic acid-Schiff staining were observed.

In general, BSC has been reported to be poorly differentiated, to have high proliferative activity, to be biologically highly malignant^{3,5,7,13,20}, and to be more frequently associated with hematogenous recurrence than with local or lymphatic recurrence^{7,13,20}. The most frequent sites of metastasis are the lung and liver³; however, metastasis to the thoracic spine or gingiva has also been reported³⁷. Therefore, it has been suggested that BSC has a poor prognosis^{3,7,8}, and the estimated overall 3-year survival rate is 28.5%²¹.

In contrast, other reports suggest that for the same clinical stage, site of origin, and treatment, the prognosis of BSC does not differ significantly from that of the more common SCC of the esophagus^{6,13}. In a comparison of 17 cases of esophageal BSC with 133 cases of esophageal SCC, Sarbia et al. found that the prognosis of patients with BSC did not differ significantly from that of patients with SCC when curative resection was performed⁶. In our case 1, until the time of writing, 6 months after the surgery, there has been no evidence of recurrence or metastasis. However, in our case 2, the patient had a poor outcome.

Postoperative radiotherapy and chemotherapy have been performed in some institutions^{4,6,13,20}. However, no consensus has been reached regarding the efficacy or usefulness of such treatments because of the limited number of cases. Larner et al. have reported that radiation therapy, either alone or

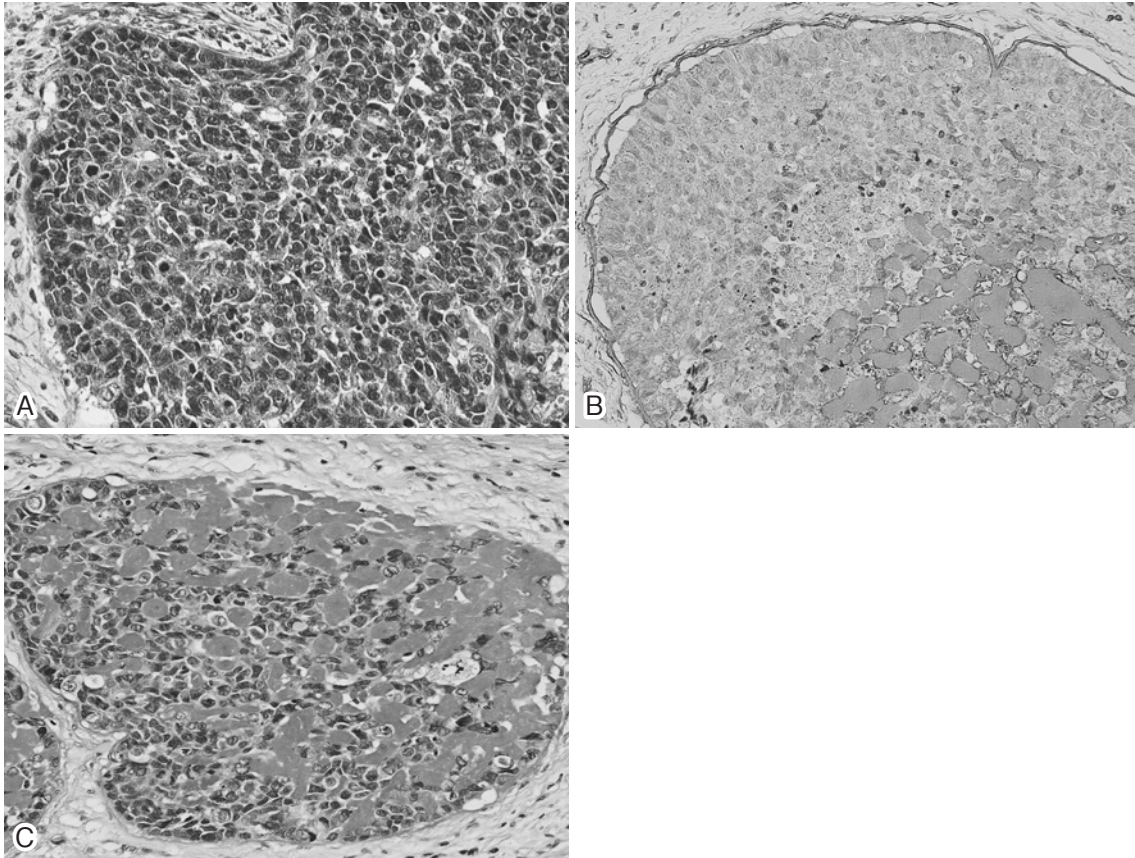


Fig. 6 Histologic examination showed that the tumor was composed of bundles of basaloid cells (A). The basaloid components were immunohistochemically positive for type IV collagen and were stained with periodic acid-Schiff stain (B, C).

in combination with surgery, achieves a local control rate of 80%²⁰, but that distant metastases are, however, not controlled in 60% of patients. Luna et al. have suggested that adjuvant chemotherapy may be warranted because of the high incidence of distant metastases¹³. Tsuchiya et al. have reported a case of esophageal BSC that was effectively treated by combined chemotherapy²². On the other hand, Sarbia et al. have suggested that the role of chemotherapy in the treatment of BSC of the esophagus remains to be established⁶. Therefore, BSC is currently treated like typical SCC, i.e., by surgery, radiotherapy, or a combination of both. For our patients, we did not perform adjuvant therapy. Further accumulation of cases is necessary to establish effective and concrete protocols for the treatment of this cancer.

In summary, we have reported two cases of BSC of the esophagus, which is rare disease. Immunohistochemical study of the resected tumor

was useful for establishing the final diagnosis.

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