Pure Sarcomatoid Carcinoma of Maxillary Sinus and Nasal Cavity Simulating Malignant Fibrous Histiocytoma

Tadashi Terada, MD, PhD

Key Words: Maxillary sinus; Malignant fibrous histiocytoma; Sarcomatoid carcinoma

Abstract

Although a few cases of sinonasal carcinoma with focal sarcomatous differentiation have been reported, pure sarcomatoid carcinoma has not been reported in the English literature. Imaging studies and gross inspection in a 60-year-old man with left-sided face pain revealed a mass in the left maxillary sinus and nasal cavity. A large incisional biopsy specimen from the nasal cavity revealed proliferation of malignant spindle and round cells with a malignant fibrous histiocytoma (MFH) pattern. Tumor giant cells were scattered, and there were areas of a vague storiform pattern. Mitotic figures were numerous. Carcinomatous component was not recognized. The histologic diagnosis was storiform-pleomorphic MFH. Tumor cells were positive for pancytokeratins AE1/3, KL-1, and CAM5.2 and cytokeratin (CK) 18, vimentin, CD68, p53, Ki-67 (labeling, 90%), α1-antitrypsin, and α1-antichymotrypsin and negative for pancytokeratin WSS, CK 34βE12, CK7, CK8, CK14, CK19, CK20, epithelial membrane antigen, S-100 protein, desmin, α-smooth muscle actin, CD34, HMB45, chromogranin, synaptophysin, myoglobin, CD45, CD30, and CD15. Because keratins were positive in tumor cells, a diagnosis of sarcomatoid carcinoma simulating MFH was made. The patient was treated with chemoradiation without significant effect and died 9 months after initial examination.

The most common malignant tumor of the sinonasal regions is squamous cell carcinoma, followed, in order, by lymphoma, adenocarcinoma, malignant melanoma, and salivary-type (nasal gland) malignancies. Anaplastic carcinoma and undifferentiated carcinoma are also reported. A few cases of carcinoma with sarcomatous differentiation and carcinosarcoma have been reported in the sinonasal region. However, to the best of my knowledge, pure sarcomatoid carcinoma without a histologically detectable carcinoma component has not been reported in the sinonasal regions.

Case Report

A 60-year-old man was admitted to the hospital because of left-sided face pain. Gross examination of the left nasal cavity showed a polyposid tumor. Imaging modalities, including computed tomography and magnetic resonance imaging, showed a mass in the left maxillary sinus and nasal cavity. A large incisional biopsy sample (2 × 2 × 1 cm) was obtained from the nasal cavity. The biopsy showed proliferation of malignant spindle and round cells with hyperchromatic nuclei and nucleoli. Tumor giant cells were scattered, and there were areas of a vague storiform pattern. There were numerous mitotic figures. A carcinomatous element was not recognized. Histologically, the tumor was diagnosed as storiform-pleomorphic malignant fibrous histiocytoma (MFH).

An immunohistochemical study was performed with the use of the DAKO EnVision method (Carpinteria, CA), as
previously described.6,7 Immunohistochemically, the tumor cells were positive for pancytokeratin AE1/3 (positive areas 10%), pancytokeratin KL-1 (30%), pancytokeratin CAM5.2 (90%) Image 2A, cytokeratin (CK) 18 (100%) Image 2B, vimentin Image 2C, CD68 Image 2D, p53 Image 2E, Ki-67 (labeling, 90%) Image 2F, α1-antitrypsin Image 2G, and α1-antichymotrypsin Image 2H. In contrast, they were negative for pancytokeratin WSS, CK 34βE14, CK7, CK8, CK14, CK19, CK20, epithelial membrane antigen, S-100 protein, desmin, α-smooth muscle actin, CD34, HMB45, chromogranin, synaptophysin, myoglobin, CD45, CD30, and CD15. Because keratins were positive in tumor cells, a diagnosis of sarcomatoid carcinoma simulating MFH was made.

The patient was treated with chemoradiation, but no significant effect was obtained. The patient died 9 months after initial examination.

Discussion

Histologically, the present tumor was compatible with storiform-pleomorphic MFH. Immunohistochemical positivity of vimentin, CD68, α1-antitrypsin, and α1-antichymotrypsin was compatible with MFH. Markers of other sarcomas were negative. As is well known, CD68, α1-antitrypsin, and α1-antichymotrypsin are not specific for MFH.

However, the present tumor showed a broad positive reaction for CK18 and pancytokeratin CAM5.2. Other anti-CK antibodies (KL-1 and AE1/3) detected CK in relatively small areas. Other CKs examined were negative. The broad expression of the low-molecular-weight CK led to the diagnosis of sarcomatoid carcinoma. Histologically, there were no areas of carcinomatous component. Therefore, the present tumor is pure sarcomatoid carcinoma.

There is a dilemma in the diagnosis with regard to H&E histologic examination and CK expression. However,
Image 2: Immunohistochemical findings. The tumor cells are positive for pancytokeratin CAM5.2 (A), cytokeratin 18 (B), vimentin (C), CD68 (D), p53 (E), Ki-67 (F),
I believe that the present tumor is pure sarcomatoid carcinoma histologically simulating MFH.

As is well known, MFH is a wastebasket diagnosis. There have been a few studies on CK expression in MFH.\textsuperscript{8-11} The expression ratios of CK were 17/67,\textsuperscript{8} 2/10,\textsuperscript{9} 1/34,\textsuperscript{10} and 3/19.\textsuperscript{11} However, expression was not as broad as in the present case. Cases of MFH with CK arising from areas free of epithelial cells are true MFH. However, in MFH with CK arising from an epithelium-positive area, as in the present case, some appear to be, in fact, sarcomatoid carcinoma.

From the Department of Pathology, Shizuoka City Shimizu Hospital, Shizuoka, Japan.

Address correspondence to Dr Terada: Dept of Pathology, Shizuoka City Shimizu Hospital, Miyakami 1231 Shimizu-Ku, Shizuoka 424-8636, Japan.

References


