A rare and unusual case of acinic cell carcinoma of parotid gland evaluated by F-18 FDG PET/CT

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Abstract
Acinic Cell Carcinoma (ACC) is a rare parotid gland tumor. In this case, we present F-18 fluorodeoxyglucose positron emission tomography/computed tomography (FDG PET/CT) images of a 75 year old male with a history of metastatic ACC. The patient was initially diagnosed in 2009 after he received multiple surgeries secondary to local recurrences. The patient was also treated with chemoradiation. PET/CT was performed as part of the treatment strategy evaluation. PET/CT demonstrated brain metastasis, multiple pulmonary metastatic nodules, multiple hepatic metastasis, hilar, pleural and mesenteric masses and multiple osseous metastasis. Although ACC is a low grade malignancy, it has a tendency to recur and metastasize. In this case, we report diffuse metastatic disease of ACC. Hence, we conclude PET/CT could be a very valuable tool managing the disease.

Keywords: FDG PET/CT, acinic cell carcinoma, parotid gland.

Introduction
Acinic Cell Carcinoma (ACC) is a rare malignant epithelial tumor accounting for about 1–6% of all salivary gland neoplasms. Although it is generally known as a low grade malignancy, ACC has a tendency to recur and metastasize. Local recurrence has been reported in 8 to 56 % of the patients (1) and distant metastasis has been reported to bone, lung and brain. There is limited data about imaging modalities regarding ACC. ACC can dedifferentiate to a more aggressive form (2), and this form has a greater tendency for metastatic disease. PET/CT can be valuable for evaluating the extent of the disease and for its management.

Case
A 75 year old male was initially diagnosed with ACC in 2009. The patient originally underwent a left radical parotidectomy in December of 2010 and then several subsequent repeat surgeries secondary to local recurrences. The patient also received radiation therapy to the left parotid gland in 2009 as well as to the L1 vertebrae in 2012. Brain metastasis was also diagnosed, he underwent resection in December 2012 and pathology confirmed the metastatic carcinoma consistent with previously diagnosed acinic cell carcinoma. He received chemotherapy and then underwent PET/CT two months later for subsequent treatment evaluation. PET/CT showed brain metastasis (figure 1), multiple lung nodules, mediastinal, pleural and hilar masses, hepatic metastases, a mesenteric mass (figure 2), as well as the right eleventh rib and left iliac bone, consistent with osseous metastases (figure 3).

Discussion
About 1-3% all head and neck malignant tumors arise in the salivary glands, with the majority involving the parotid gland (3). ACC comprises 1-6 % of malignant salivary gland tumors and it arises most commonly within parotid gland (81-98 %) followed by the submandibular gland (11%) and minor salivary glands (3-12%) (3,4). The histopathological appearance of neoplastic cells in ACC are similar to normal acinic cells and the diagnosis depends on the presentation of serous acinar cell differentiation. ACC is considered a low grade salivary gland tumor with a low rate of recurrence and metastasis. Distant metastasis occurs in 0 to 13% of cases (5) and the most frequent metastatic site includes: cervical lymph nodes, liver, lungs, bones (most commonly the thoracic spine), brain and the contralateral orbit (4-6).
In the presented case we observed brain, lung, liver, mediastinal and mesenteric nodal disease and bone metastasis. The patient had a prior history of L1 metastasis with subsequent radiation therapy to this region. So although bone metastasis was observed on rib and iliac bone on FDG PET/CT we could not show L1 metastasis. There were only three cases in the literature with spinal metastasis and our case is the fourth (3,4,6).

To our knowledge there is limited data regarding imaging modalities of ACC. Cha and friends (7) reported low sensitivity of preoperative CT. Hyun and friends (2) reported a case in which FDG PET/CT was a useful tool in dedifferentiated ACC. The pathological features of high grade ACC include tumor necrosis, high mitotic figures, stromal invasion and nerve involvement (8). We could not found these features in our case’s pathology report but the cases with distant metastasis had been more aggressive clinical feature and they were suspicious for high grade ACC. Although there were numerous articles about the value of PET/CT in parotid or salivary glands (9-10), none of them reported ACC in their study patients. This likely reflects the rare nature of ACC as it is the fourth malignant tumor of the salivary gland tumors, after mucoepidermoid carcinoma, adenoid cystic carcinoma and expleomorphic adenocarcinoma. Generally, low grade salivary gland tumors tend to be less FDG-avid but in this case we want to remind that ACC could have an aggressive and metastatic form.

**Conclusion**

In this case, we report high FDG-avidity and diffuse metastatic disease in this presentation of ACC. Hence, we conclude PET/CT could be valuable tool evaluating and managing the disease.

**References**


