



RARE CASE REPORT OF PLEURAL AND PERITONEAL METASTASIS FROM ADENOID CYSTIC CARCINOMA OF SUBMANDIBULAR GLAND MIMICKING MESOTHELIOMA

Radiology

Geetika Sindhwani	Assistant Professor, Department of Radio-diagnosis, Pramukhswami Medical College and Shree Krishna Hospital, Karamsad, Anand, Gujarat.
Abhinav Jain	Senior Resident, Department of Urology, Institute of Liver and Biliary sciences. New Delhi. - Corresponding Author
Nirav Niranjambhai Asarawala	Department of Medical Oncology, Pramukhswami Medical College and Shree Krishna Hospital, Karamsad, Anand, Gujarat, 388325.
Sanjay N Chaudhary	Professor, Department of Pathology, Pramukhswami Medical College and Shree Krishna Hospital, Karamsad, Anand, Gujarat, 388325.

ABSTRACT

Malignant salivary gland tumours are rare. Adenoid cystic carcinoma (ACC) is most common histological subtype of malignant tumours of submandibular gland with high propensity for peri-neural extension. ACC of submandibular gland typically has a prolonged clinical course with a high rate of distant metastases (around 40%). The preferred sites of metastases are lung and bone, followed by the brain and liver. We hereby report rare case of a patient with mesothelioma like pleural and peritoneal metastasis, presented 2 years after therapeutic resection of ACC of the submandibular gland.

KEYWORDS

Distant metastasis, Local Recurrence, Systemic Metastasis, Omental Metastasis.

Introduction:

Malignant salivary gland tumours are rare. Adenoid cystic carcinoma (ACC) is most common histological subtype of malignant tumours of submandibular gland with high propensity for peri-neural extension (Coupland A 2014). ACC of submandibular gland typically has a prolonged clinical course with a high rate of distant metastases (around 40%) (Balducci G et al 2011). The preferred sites of metastases are lung and bone, followed by the brain and liver (Balducci G et al 2011 and Gandhi AK et al 2015).

We hereby report rare case of a patient with mesothelioma like pleural and peritoneal metastasis, presented 2 years after therapeutic resection of the submandibular gland.

Case report:

41 year old female presented with vague complains of cough, low grade fever, weight loss and anorexia since 2 months with enlarged right submandibular gland. Patient was on AKT since 5 months with no obvious response. She was operated 2 years back for similar lump on the right side which was reported to be Pleomorphic Adenoma. Contrast enhanced CT scan of thorax and abdomen was done for evaluation of pathology. Study revealed loculated pleural effusion with well-defined, nodular, heterogeneously enhancing, circumferential pleural thickening (>1 cm) along apical, mediastinal, costal as well as diaphragmatic pleura and along horizontal and oblique fissures in right hemi-thorax. Similar appearing irregular, homogeneously enhancing thickening was seen in peritoneum involving infra-hepatic region, right peri-renal region, right para-colic gutter and right side of the pelvis. There was infiltration of omentum and mesentery with associated clumping of few small bowel loops. Multiple, heterogeneously peripherally enhancing lesions with central hypodense areas were seen in both the lobes of the liver. There was associated loculated ascites in infra-hepatic region, right para-colic gutter & right side of pelvis. There were multiple lytic lesions in ribs and vertebral bodies. CT Findings are shown in Figure 1. Radiological diagnosis was pleural mesothelioma with multiple metastatic deposits in peritoneum, liver, omentum and bones with pleural effusion and ascites. Histologically and Immunohistochemistry lesion turned out to metastasis from adenoid cystic carcinoma (Cells expressed Cytokeratin, EMA (focal) and c-kit (focal) and immuno-negative for synaptophysin, Chromogranin A, WT-1, Desmin, P-63 and TTF-1). Pathological illustrations are shown in Figure 2. Ultrasound of the neck revealed heterogeneous lesion with internal vascularity involving right submandibular gland with irregular margins and infiltration of surrounding fat, skin and subcutaneous tissue. No cystic component was seen. Left submandibular gland was normal. There were heterogeneous nodes at submental region and right level IV which

were abutting adjoining vessels (angle < 90 degrees). Ultrasound findings are summarized in Figure 3. Patient was started on doxorubicin, cisplatin and cyclophosphamide, as patient had local and systemic recurrence.

Discussion:

The submandibular gland is the second largest salivary gland, located in the floor of the mouth adjacent to mandible. It drains through the Wharton's duct in the anterior sublingual region in para-midline location (Rastogi R 2012). Most salivary gland tumours are benign and occur in patients of any age (Rastogi R 2012). Adenoid cystic carcinoma (ACC) accounts for 1% of all head and neck cancers and about 10-22% of all malignant tumors of the major and minor salivary glands (Gandhi AK 2015). Occurrence of malignant ACC is inversely proportional to size of salivary glands, thus making minor salivary glands (65%) and submandibular gland (19%) more prone to malignancy than parotid gland (16%). (Gandhi AK 2015 and Rastogi R 2012)

Classical ACC has been described as a tumor with low-grade malignancy as per histologic differentiation and slow-going course, but persistent stubborn behavior, frequent recurrent growths and late onset and inevitable metastases, eventually lead to an unfavorable prognosis for the patient (Balducci G 2011). Because of all these characteristics, management of these tumors is a distinct therapeutic challenge for treating surgeons and oncologist.

In a study by Chen et al., distant metastases were commonly seen in 25 lung (71%), 5 bone (14%), 3 liver (9%), and 2 brain (6%) patients. In another study by Gandhi et al studying 66 patients of ACC of head and neck region, local recurrence was most commonly seen followed by lung metastasis and bone metastasis were seen. Pleural and peritoneal metastases are not mentioned in any study in literature.

The factors that substantially influence the development of distant metastases are histological growth patterns and primary glandular origin (Gandhi AK 2015). The major salivary gland lesions have more propensities to metastasize than minor salivary glands. Additionally, tumours with solid histological growth pattern will show more distant metastatic spread than the cribriform or tubular histological subtypes (Bhayani MK 2012). Other factors which may influence metastatic development are age of onset beyond 45 years, pathologically proven positive lymph nodes, extracapsular spread (ECS) from lymph nodes, high-grade histology and solid tumor subtype (Bhayani MK 2012 and Ko YH 2007).

Surgery plays major role in treatment of ACC. Submandibular ACC

are usually treated by a supra-omohyoid neck dissection chased by postoperative radiotherapy (Gandhi AK 2015). Studies have described superiority of adjuvant radiotherapy over single modality management (Gandhi AK 2015). However, the improvement in therapeutic loco-regional control with combined modality treatment has not much affected disease free survival and life expectancy of patients. Chemotherapy currently is seeking a major role in the management of advanced and metastatic salivary gland tumors. There is an arising need for biomarkers that can help in identification of the patient population at increased risk of distant circulation of disease, to frame a cost-effective treatment protocol to fulfill patient requirements (Balducci G et al 2011)

Our case was rare as no such extensive metastatic spread in a shorter duration of time of disease process to pleura and peritoneum has been reported in literature till date as per our knowledge.

Images:

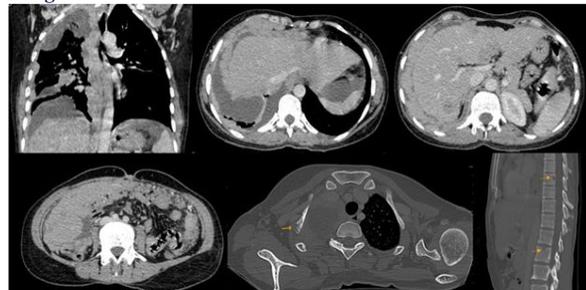


Figure 1. Computed Tomography(CT) coronal and axial images: (a and b) Plaque like homogeneously enhancing thickening along pleura. (c) Multiple heterogeneously enhancing lesions are seen in liver (d) Homogeneously enhancing deposits along peritoneum lining liver and omentum. (e and f) Multiple lytic lesions are seen in ribs and vertebral bodies (marked by arrow).

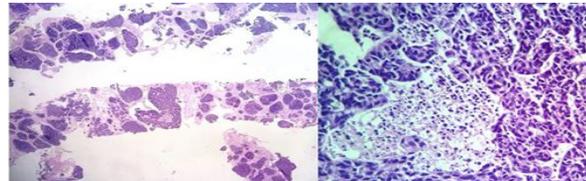


Figure 2: Histopathological findings (a) The microphotograph shows tumour cells infiltrating fibro-adipose tissue in nodules, nests and cribriform pattern. (H & E stain, 40 x). (b) The microphotograph shows the tumour cells are small to medium sized, round to oval, hyperchromatic nuclei with scant eosinophilic cytoplasm with central areas of comedo-necrosis. (H & E stain, 400x).



Figure 3. Ultrasound images (a) Submandibular region shows well-defined hypo-echoic lesion with irregular margins and internal vascularity. (b) Few hypoechoic lymph nodes are seen in right side of neck. (c) Multiple target lesions diffusely distributed in liver.

References:

- Coupland A, Sewpaul A, Darne A, White S. Adenoid cystic carcinoma of the submandibular gland, locoregional recurrence, and a solitary liver metastasis more than 30 years since primary diagnosis. *Case reports in surgery*. 2014 Oct 27;2014.
- Balducci G, Sagnotta A, Muroli M, Cacchi C, D'Amato A. An unusual case of exclusive liver metastases from adenoid cystic carcinoma of the submandibular gland: a role for surgery? Report of a case. *Surgery today*. 2011 Apr 1;41(4):596-9.
- Gandhi AK, Roy S, Biswas A, Bhasker S, Sharma A, Thakar A, Mohanti BK. Adenoid cystic carcinoma of head and neck: A single institutional analysis of 66 patients treated with multi-modality approach. *Indian journal of medical and paediatric oncology: official journal of Indian Society of Medical & Paediatric Oncology*. 2015 Jul;36(3):166.
- Rastogi R, Bhargava S, Mallarajapattana GJ, Singh SK. Pictorial essay: Salivary gland imaging. *Indian Journal of Radiology and Imaging*. 2012 Oct 1;22(4):325.
- Chen AM, Buccini MK, Weinberg V, Garcia J, Quivey JM, Schechter NR, Phillips TL, Fu KK, Eisele DW. Adenoid cystic carcinoma of the head and neck treated by surgery with or without postoperative radiation therapy: prognostic features of recurrence. *International Journal of Radiation Oncology Biology Physics*. 2006 Sep 1;66(1):152-9.
- Bhayani MK, Yener M, El Naggar A, Garden A, Hanna EY, Weber RS, Kupferman ME. Prognosis and risk factors for early stage adenoid cystic carcinoma of the major salivary glands. *Cancer*. 2012 Jun 1;118(11):2872-8.
- Ko YH, Lee MA, Hong YS, Lee KS, Jung CK, Kim YS, Sun DI, Kim BS, Kim MS, Kang JH. Prognostic factors affecting the clinical outcome of adenoid cystic carcinoma of the head and neck. *Japanese journal of clinical oncology*. 2007 Nov 1;37(11):805-11.