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Case Report

A 71-year-old man was admitted to the Medical Unit of the University Hospital of Patras, with a one-month history of right pleurodynia, mild productive cough, anorexia and mild headache. He had no fever or weight loss and his physical condition was satisfactory. Physical examination revealed a mild decrease in breathing sounds, especially on the right side and a mild hepatomegaly. There weren’t any marked findings in the head and neck region, except for a very mild redness and enlargement of the left tonsil, initially not considered as abnormal.

His past medical and surgical history included Crohn’s disease diagnosed 20 years ago, cholecystectomy a year ago, benign prostate hypertrophy and arterial hypertension. The patient had been a smoker, but gave up smoking 13 years ago and drank alcohol occasionally. There was no history of ear, nose and throat (ENT) problems.

Laboratory findings on admission showed a mild increase of SGOT (42 U/l) and SGPT (58 U/l) levels and an increase of LDH (380 U/l) and erythrocyte sedimentation rate (ESR) (75 mm the 1st hour). A chest X-Ray (CXR) showed opacity in the right lung and a subsequent CT-scan revealed a mass of $3.2 \times 4.1$ cm in the posterior bronchopulmonary segment of the right upper lobe, considered to be malignant. There were also enlarged right lung hilar, superior mediastinal and paratracheal lymph nodes. Further CT-scan evaluation of the abdomen demonstrated various lesions of low density in the liver and spleen, whereas both CT and MRI were negative for brain pathology. Subsequently, the patient

**Abstract.** - Tonsillar metastasis from lung cancer is an extremely rare event and is usually related to metastatic spread of the neoplastic disease to other organs with poor prognosis. We present the unusual case of a 71-year-old man who developed a huge metastasis to the left palatine tonsil from a lung adenocarcinoma. The tumor was exophytic with necrotic and hemorrhagic areas, occupying a large portion of the oropharynx and producing airway obstruction, thus necessitating tracheostomy. Radiation therapy was delivered in an attempt to reduce the size of the tumor. Although a mild decrease of the tonsillar mass was noted, the designed therapy had to be discontinued because of a rapid deterioration of the patient’s general condition. The patient finally died of disseminated disease. This case highlights the need for a thorough evaluation of a suspicious tonsillar enlargement, as this may be a sign of a primary malignancy elsewhere in the body.

**Key Words:** Tonsillar metastasis, Lung cancer, Adenocarcinoma.

**Introduction**

Tonsil is a quite rare site of metastatic disease. Among organs that have been documented as being the primary sites of tonsillar metastasis, the most common are kidney, skin (melanoma), lung and breast and occasionally colon, rectum, cecum, liver, stomach, prostate and testis. We present a patient with a metastasis to the left palatine tonsil from a lung adenocarcinoma, compromising the airway and necessitating tracheostomy. A number of studies in the literature have documented the metastatic spread of various histological types of lung cancer to the tonsil, but, as far as we are aware, none of adenocarcinoma and none of the size encountered in our patient.

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underwent bronchoscopy and biopsy of the right upper lobe mass, which confirmed the presence of adenocarcinoma. Further investigations with liver fine needle aspiration cytology (FNAC) and bone scintigraphy revealed the presence of secondary deposits to the liver, spleen and 8th and 9th right ribs.

During hospitalization the patient gradually developed fever, right upper lobe atelectasis on CXR, hemoptysis and urinary retention. He was administered the appropriate antibiotics, bronchodilation and symptomatic therapy. However, the patient’s physical condition deteriorated further, the hematocrit and serum albumin were decreased, whereas the white blood cell count (WBC), ESR, transaminases, γ-GT, ALP and LDH were significantly elevated. Two weeks after first presentation, the patient complained of sore throat, swallowing difficulty, voice change, progressive dyspnea and left otalgia. Head and neck examination revealed a huge left tonsillar enlargement estimated approximately 6 × 5 cm, when examined by the ENT staff (Figure 1A). The mass was reddish, fleshy and exophytic, with necrotic and hemorrhagic areas, occupying a large portion of the oropharynx. The bad general condition of the patient, his reluctance to receive general anesthesia and the risk of profound peri- and post-operative hemorrhage led us to biopsy the lesion instead of performing a tonsillectomy which is routine practice in cases of suspected tonsillar malignancy. The biopsy confirmed the presence of a poorly differentiated metastatic adenocarcinoma of the lung with areas of signet-ring cell formation (Figure 2). The two biopsies – from lung and tonsil as compared side-by-side – revealed morphological similarities. Neoplastic cells had abundant eosinophilic cytoplasm and pleomorphic nuclei with distinct one or more nucleoli. Isolated cells with signet ring morphology were also recognized. For immunohistochemical analysis the avidin-biotin complex technique was used and antibodies against AE1/AE3, CK7, CK8, CK18, CK20, EMA, CEA, Thyroid Transforming Factor (TTF-1), Hepatocyte antigen nuclei, surfactant apoprotein (PE-10) and CD15 were counterstained with hematoxylin. In the immunohistochemical examination the neoplastic cells of both biopsies were positive for AE3, CK7, CK8, CK18 and CD15. They were negative for all other markers. Keratin 7 (CK7) is a strong indicator of glandular differentiation. Strong positivity for CK7 and CD15 suggests a closer relation to lung adenocarcinoma. The patient underwent an oral cavity and neck CT-scan (Figure 3) to evaluate the extent of the tumor and any possible neck node involvement. The CT-scan of the neck did not reveal any suspicious lymph nodes suggesting that the mass was probably metastatic and not a primary tonsillar malignancy. The patient was then scheduled for a tracheostomy to secure the airway, radiotherapy to reduce the bulk of the tumor and, if his condition allowed, for surgical resection of the mass followed by chemotherapy. Initially he denied any surgical intervention, but within the next 48 hours his airway was further compromised, so that tracheostomy under local anesthesia became necessary on urgent basis. Subsequently, he received radiotherapy. Although a rapid deterioration of general condition called for discontinuance of radiotherapy, an approximately 20% decrease in the size of the tumor was noted (Figure 1B). The patient refused any further intervention, even the placement of a nasogastric feeding tube, and finally died a week later.

Figure 1. Tumor of the left palatine tonsil. The exophytic mass is clearly visible. A, Prior to radiotherapy. B, Following radiotherapy.
Adenocarcinoma is the most common type of non-small cell lung cancer (NSCLC), accounting for 30-35% of all lung cancer cases. Its incidence has increased over the last 30 years. It is the most common type of lung cancer in women and nonsmokers and is strongly associated with lung scarring (“scar carcinoma”) and chronic interstitial lung disease. Adenocarcinomas are usually asymptomatic in early stages and tend to metastasize early to regional lymph nodes and distant sites, especially brain. Over 50% of the patients are often detected by an asymptomatic nodule on a routine CXR or by seeking the primary tumor of distant metastases. Histologically, these tumors usually show glandular formation or the presence of mucin by staining with mucicarmine, Periodic Acid-Schiff with diastase (PASD) or Alcian blue and are classified as well, moderately and poorly differentiated tumors, the latter carrying poorer prognosis and being rapidly fatal. Signet-ring cell cancer is a type of tumor characterized by mucin secreting adenocarcinoma cells that contain intracytoplasmic mucin. The term ‘signet-ring cell’ was chosen because the accumulation of mucin pushes the nucleus to the periphery. Tonsillar metastasis from primary signet-ring cell carcinoma of the lung is rather unusual, whereas it has been reported for other cancers.

In 1907, Joseph was the first author who described a case of breast carcinoma with diffuse metastatic spread in various organs also affecting the palatine tonsil. Since then, more than 100 cases of cancers from various organs have been reported in the literature to affect the palatine tonsil by metastasis. Regarding lung cancer 18 cases have been reported to involve the tonsils, 16 the palatine and 2 the lingual tonsil and the histological types described, mainly consisted of small cell carcinoma.

Monforte et al reported the first case of a lingual tonsillar metastasis as the first manifestation of a bronchial adenocarcinoma, whereas to the best of our knowledge, our patient is the first reported case of palatine tonsillar metastasis of this histological type. In the majority of the aforementioned cases the prognosis was rather poor and as stated by Brownson et al, the mean time of survival following the development of tonsillar metastasis was nine months or less, independently of the histology of the primary tumor.

Bozza et al described a case of palatine tonsillar metastasis from a small cell carcinoma of the lung and noted the chance for an exclusively palliative treatment as there are no survivors in...
such events. However, Murakawa et al\textsuperscript{17} achieved complete remission of tonsillar and cervical lymph node metastasis from a large cell carcinoma of the lung in a 52-year old female patient who was treated by combined chemoradiotherapy.

More recently, Tsubochi et al\textsuperscript{18}, described a case of a 39-year-old male with lingual tonsillar metastasis and jugular lymphadenopathy, from a bronchial adenocarcinoma, who was successfully treated with external radiotherapy and has been alive more than 8 years after treatment. In our case presented to our Unit at a very late stage of the disease had a very little chance of cure with the planned radiotherapy course.

The metastatic pathway to the tonsil is controversial and difficult to determine. Palatine tonsils have only efferent lymphatics. As such a neoplastic spread via this route has to be retrograde, where tumor cells may pass through the portal circulation beyond hepatic and pulmonary filters to the heart and distribute to the tonsil via the systemic circulation. The possibility of direct implantation of cancer cells from instrumentation during bronchoscopy\textsuperscript{4} has been suggested in patients with lung cancer. However, in our patient this does not seem to be true in view of the rapid development of tonsillar metastasis after bronchoscopy, and the fact that the enlarged tonsil was present before the bronchoscopy.

In conclusion, this is a case of an unusual palatine tonsillar metastasis from lung adenocarcinoma, which necessitated tracheostomy to bypass the airway obstruction and which partially responded to radiotherapy despite the fatal course of the disease. As shown by the literature, we should always have in mind to thoroughly examine not only the head and neck area, but also other areas when evaluating a suspicious tonsillar enlargement, as this may be a manifestation of a primary malignancy elsewhere in the body.

References


