CASE REPORT

Pulmonary collision tumor: Metastatic adenoid cystic carcinoma and lung adenocarcinoma

M. Blanco\textsuperscript{a,}\textsuperscript{*}, E. García-Fontán\textsuperscript{a}, J. Rios\textsuperscript{b}, J.E. Rivo\textsuperscript{a}, R. Fernández-Martín\textsuperscript{a}, M.A. Cañizares\textsuperscript{a}

\textsuperscript{a} Department of Thoracic Surgery, Vigo University Clinical Hospital, Vigo, Spain
\textsuperscript{b} Department of Pathology, Vigo University Clinical Hospital, Vigo, Spain

Received 5 December 2010; accepted 26 May 2011
Available online 29 July 2011

Summary We report an extraordinary case of collision tumor consisting of a lung adenocarcinoma and a metastatic adenoid cystic carcinoma in a 56 year-old man. He was diagnosed with a pulmonary nodule 11 years after treatment of an adenoid cystic carcinoma of the right maxillary sinus. A non-small cell carcinoma was observed when a transbronchial biopsy was performed. The other component of the nodule was only diagnosed with pathological examination of the resection specimen.

© 2010 Sociedade Portuguesa de Pneumologia. Published by Elsevier España, S.L. All rights reserved.

Introduction

Collision tumors are a rare condition in which two histologically different malignant neoplasms, originating from two separate primary sites, intermix with one another.
or our case, as described in the T o our). A
Fig. 2
5
a). A subpleural nodule of ACC was also observed
Nevertheless, the occurrence of
Fig. 2
In the lung,
C-kit is activated by binding of its lig-
16x795
Document downloaded from http://www.elsevier.es, day 22/08/2018. This copy is for personal use. Any transmission of this document by any media or format is strictly prohibited.

Metastatic adenoid cystic carcinoma and lung adenocarcinoma

...immunohistochemical techniques performed after surgery.

...nocarcinoma and a metastasis of an ACC diagnosed with

...consisting of a lung ade-

...squamous cell carcinoma and T-cell lymphoma.

...knowledge, this is the first report that describes a case

...lobe brochus and right inferior lobar artery (Fig. 1). A

...middle lobe. These tumors are difficult to diagnose preoperatively

...asymptomatic and may remain so for long periods.

...characterized by slow growth and high propensity to sys-

...metastases. The lung is the most common site of

...metastasis, as pulmonary metastases have been reported

...often the only way to make a correct diagnosis.1

...adenoid cystic carcinoma (ACC) is a malignant tumor

...classification with the salivary gland tumors,

...adenoid cystic carcinoma (ACC) is a malignant tumor

...consisting of large-cell carcinoma and adenocarcinoma4 or

...bronchogenic carcinoma have been unex-

...Astrocytic nodule, which was in contact with the middle

...sulcus and right inferior lobar artery (Fig. 1). A

...neoplasic cell proliferation with large cytoplasmic and hyperchromatic nuclei. Neoplastic cells

...Cytokeratin AE1/AE3, Cytokeratin 7 and TTF-1. With these features, non-small cell carcinoma with immuno-

...positional admixture or intermediate cell population zone away from the primary tumor. We did not observe histo-

...neoplastic cell proliferation with large cytoplasmic and hyperchromatic nuclei. Neoplastic cells

...expression of Cytokeratin AE1/AE3, Cytokeratin 7 and TTF-1.

...the patient is alive and disease-free without any further treatment 17 months following surgery.

Discussion

The occurrence of multiple malignancies in the same anatomical site in organs such as the thyroid, breast and

...lymph nodes has been previously described.6 In the lung, single cases of bronchogenic carcinoma have been unex-

...tumors remains an extremely uncommon condition with a very limited number of cases having

...ACC is a rare form of malignant neoplasm that usually originates within the major and minor salivary glands of

...clinical condition with a very limited number of cases having

...metastasis appeared in the lung 11 years after

...occurrence of ACC metastasis inside the nodule because there were no local recurrences during the follow-up period and we found a

...immunohistochemical work-up, one area consisted of glandular neoplastic proliferation with poorly differenti-

...medium material inside. These cells showed a

...transbronchial biopsy with bronchoscopy was performed

...radical hemimaxillectomy and radiotherapy 11 years earlier was admitted to our

...case report

A 56-year-old man with a previous history of adenoid cystic carcinoma of the right maxillary sinus (pT4N0Mx)

...that had been treated by right radical hemimaxillectomy and radiotherapy 11 years earlier was admitted to our institution after referral from his oncologist. During the reg-

...CT scan showed a 2.5 cm diameter nodule, with irregular morphology in the middle lobe, which was in contact with the middle lobe brochus and right inferior lobar artery (Fig. 1). A

...performed showing an epithelial neoplastic cell proliferation with large cytoplasms and hyperchromatic nuclei. Neoplastic cells

...High expression of Cytokeratin AE1/AE3, Cytokeratin 7 and TTF-1. With these features, non-small cell carcinoma with immuno-

...lesions and large cells with severe cytologic atypia TTF-1

...negative (Fig. 2d). The other area was formed by basophil epithelial nests with the presence of mucoid material inside. These cells showed a

...positive (Fig. 2b) and C-kit (CD117) negative (Fig. 2d). The other area was formed by basophil epithelial nests with the presence of mucoid material inside. These cells showed a

...The patient is alive and disease-free without any further treatment 17 months following surgery.

Case report

A 56-year-old man with a previous history of adenoid cystic carcinoma of the right maxillary sinus (pT4N0Mx) that had been treated by right radical hemimaxillectomy and radiotherapy 11 years earlier was admitted to our institution after referral from his oncologist. During the regular follow-up, a computed tomography (CT) scan showed a 2.5 cm diameter nodule, with irregular morphology in the middle lobe, which was in contact with the middle lobe brochus and right inferior lobar artery (Fig. 1). A transbronchial biopsy with bronchoscopy was performed showing an epithelial neoplastic cell proliferation with large cytoplasms and hyperchromatic nuclei. Neoplastic cells expressed Cytokeratin AE1/AE3, Cytokeratin 7 and TTF-1. With these features, non-small cell carcinoma with immunohistochemical stigmas of adenocarcinoma was diagnosed. A positron emission tomography (PET) demonstrated a focus of increased FDG uptake in the right hilum contacting with the middle lobe.

It was necessary to perform a middle-lower bilobectomy as the nodule was located in the hilum of the middle lobe and affected the major fissure. Mediastinal lymph node dissec-

...tation of various transcription factors that regulate apoptosis,
cell differentiation and proliferation. Kit protein expression is important in the development of normal human tissues and in many human neoplasms including mastocytosis, gastrointestinal stromal cell tumors, melanoma, breast cancer, gynecologic cancers, thyroid neoplasms, etc. \(^{10,11}\) Recently, Kit expression has been identified in several types of salivary gland tumors. In these tumors, kit expression has been most extensively documented in adenoid cystic carcinomas with an expression frequency ranging from 67 to 100. \(^{12}\)

If we consider the origin of ACC, we must distinguish metastatic ACC from primary ACC of the lung. Pulmonary ACC is a malignant tumor arising in the tracheobronchial glands.

Figure 2  (a) Section of the collision tumor stained with hematoxilyn and eosin. We can observe the lung adenocarcinoma on the left side of the bronchial lumen and the adenoid cystic carcinoma on the right; objective magnification 20×. (b) Immunohistochemical detection of TTF-1 was positive in the lung adenocarcinoma; objective magnification 400×. (c) Immunostaining with TTF-1 in the adenoid cystic carcinoma was negative; objective magnification 400×. (d) Immunohistochemical detection of C-kit was negative in the lung adenocarcinoma; objective magnification 400×. (e) C-kit expression in the adenoid cystic carcinoma with a basal immunostaining; objective magnification 400×.
distributed in the airway submucosa, with a similar morphology to ACC arising in the salivary glands. Because of the site of origin, pulmonary ACC is more common in the central bronchi than in the segmental bronchi. Reports of ACC originating in the peripheral lung are rare. In addition, in cases of occurrence in the periphery, lung metastases from a salivary gland tumor must be ruled out.\textsuperscript{13} In our case, the characteristics we observed gave us the final diagnosis of a metastatic ACC. These characteristics were: (1) The obvious difference in the histological pattern between the two tumors. Moreover, we did observe no histological admixture or an intermediate cell population zone between both tumors. (2) The different immunohistochemical expression of both tumors for C-kit and TTF-1. (3) The existence of another subpleural nodule in the right lower lobe. (4) The oncology history of the patient.

In conclusion metastasis in ACC can manifest itself very late, and thus, long-term follow-up and a high index of suspicion is necessary to diagnose them early. This was observed in the present case. We would like to emphasize the role of detailed histopathologic analysis and the use of immunohistochemistry in better identifying lung neoplasms.

Conflict of interest

The authors declare that they have no conflict of interest.

References