Hepatoid Adenocarcinoma of the Lung

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Abstract

We present the case of an 80-year-old patient hospitalized for the study of a lower limb bone lesion. The biopsy of this lesion was suggestive of liver cancer metastasis. However, the study of the liver did not present any local lesion. In the event of an hepatoid tumor, a study of the digestive tract was performed, without detection of neoplasia. By recurrent respiratory infections, it was hypothesized a tumoral lesion at this level, which was confirmed by later thorax CT and biopsy.

Palabras clave: Adenocarcinoma. Pulmón.

Keywords: Adenocarcinoma. Lung.

Introduction

Hepatoid adenocarcinoma is a rare cancer, defined by its morphological and functional differentiation similar to hepatocellular carcinoma[1]. The most commonly affected organ is the stomach (63%) but it may affect others, such as ovary (10%), lung (5%), bladder (4%), pancreas (4%) and uterus (4%)[2]. Hepatoid adenocarcinoma of the lung is an extremely rare form, with only 20 cases described[3]. The pathophysiology is not yet fully described, but during embryonic development, the lung, liver and stomach, all derive from the foregut. Probably, due to changes in differentiation, adenocarcinoma cells from specific organs, such as the lung, differentiate into liver cells[1]. Hepatoid adenocarcinoma was first described in 1990 by Ishikura et al[4]. Five cases of hepatoid adenocarcinoma of the lung with alpha-fetoprotein expression (AFP) were described in this study and 2 criteria were created for its diagnosis: a. Typical acinar or papillary adenocarcinoma, b. A component resembling hepatocellular carcinoma and expressing AFP[2,4]. These criteria have been updated, namely the production of AFP by neoplasia, given the use of almost certainly more specific immunohistochemical markers (such as Hep-PAR-1). However, given the scarce number of diagnoses performed so far, a ultimate conclusion has not yet been reached[5].

Case description

Eighty-year-old male, with clinical history of colon cancer resected in 1999, a former smoker with a 60 pack-year history, without chronic medication. The patient was referred to pulmonology consultation for suspected Chronic Obstructive Pulmonary Disease. In the follow-up, it was required a thorax CT which presented: "In the mediastinum two ganglionic agglomerates are evident, one located in the right para-tracheal region, presenting some enlarged ganglia, considering the limitation of the confluence, apparently 25x16mm. The other cluster in the right hilar region, with smaller ganglia (...). "; in the lung parenchyma there are no relevant structural changes... In the pancreas... nodular image with about 11mm, hypodense but with poorly defined contours, with focal point of peripheral calcification... it is suggested a confrontation with MRI study ". In order to characterize the pancreatic nodule, abdominal MRI was requested. It described the pancreatic nodule as having a probable cystic nature, adding the following change: "During the study, we observed an expansive lesion involving the left iliac bone and extending to the gluteal region, measuring approximately 54x47 mm and presenting enhancement after intravenous contrast (IVC), that should be histologically characterized". When questioned, the patient reported a 3 month evolution anorexia and weight loss, as well as a thypical neuropathic pain ("electric shock") originating in the gluteal region with irradiation to the left lower limb, requiring frequent use of analgesic medication. In order to study the bone lesion, the patient was admitted to the Internal Medicine Service. He carried out a complete analytical study, including protein electrophoresis and immunofixation, colonoscopy, gastro-duodenal transit, upper digestive endoscopy, all negative. He also performed a lesion biopsy, whose anatomo-pathological result revealed: "malignant neoplasm of large cells with abundant and eosinophil cytoplasm, oval nucleus sometimes vesicular with evident nucleolus. Neoplastic cells are arranged in nests with extensive areas of necrosis. The immunohistochemical study showed intense and diffuse immunoreactivity of the neoplastic cells for CK7; Ck CAm 5.2 and for the HSA. Negativity for CK20; PSA; P63 and TTF1. Conclusion: Bone metastases of carcinoma, whose immunohistochemical study favors hepatic origin." (fig.1) Imagiology was contacted for reassessment of previously performed abdominal MRI, confirming that there was no other evidence of tumoral liver injury, besides an hemangioma. The hypothesis is that it is an hepatic tumor with an extrahepatic location. Given the previously performed exams (endoscopy, colonoscopy, transit), the hypothesis of tumoral formation at the gastrointestinal level was excluded. During hospitalization, the patient maintained clinical signs of lower respiratory tract infection, without radiological translation or improvement with antibiotherapy. CT thorax was repeated, and demonstrated: "In the right paratracheal region we observed adenopathies, the largest with 25 x 24mm... In the right hilar region there is a tissue formation, heterogeneous after CIV (conglomerate of necrotizing adenopathies? Tumoral mass?). It causes partial atelectasis of the middle and right upper lobes by bronchial invasion/ compression. There is also a pulmonary consolidation area with air bronchogram in the lower right lobe. In the basal segments of the lower right lobe there is an area of pulmonary densification, vaguely nodular with cystic images in the interior that may represent ectasia of bronchial structures, with peripheral ground-glass attenuation, measuring 16 mm. In the basal segments of the left inferior lobe, there is a calcified peripheral micronodule with 2.5mm. There is another non-calcified nodule slightly below... right pleural effusion and pericardial effusion... ". Given this result, bronchofibroscopy was performed, which revealed: "Signs of tumor

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Fig 1. Bone lesion biopsy was almost entirely constituted by a malignant neoplasm of large abundant cytoplasm eosinophilic cells with oval nucleus and obvious nucleolus. Neoplastic cells were arranged in nests with extensive areas of necrosis. The immunohistochemical study showed intense immunoreactivity for CK7, Cam5.2 and HepPar1 and negativity for CK20; PSA; P63 and TTF1.

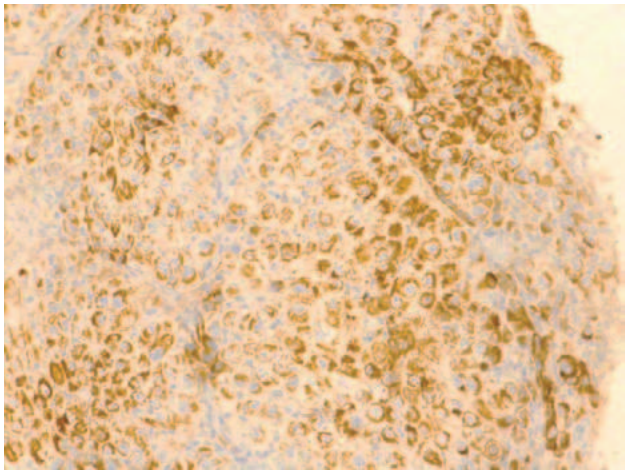
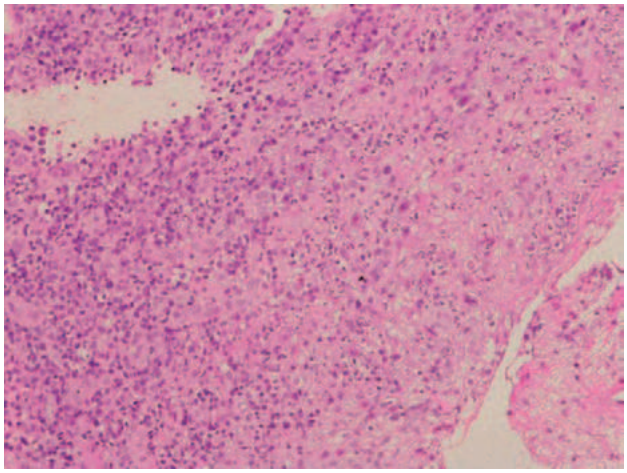


Fig 2. Biopsy specimen revealed bronchial mucosa with extensive malpighian metaplasia. Chorion infiltration by neoplastic cells was observed focally. This cells were polygonal with large amount of eosinophilic cytoplasm and central hyperchromatic nuclei with prominent nucleoli, resembling hepatocellular carcinoma.



infiltration in the right bronchial tree up to the emergence of the right basal pyramid, which conditions enlargement of the B spur, procidence of the anterior wall of A and C, conditioning concentric stenosis, particularly of B and C, allowing the passage of the bronchofibroscope". Bronchial biopsy revealed: "... infiltration of the chorion by large, isolatedly arranged neoplastic cells with irregular, bulky nuclei with one or more prominent nucleoli. These fragments present a lymphoplasmacytic and granulocytic inflammatory infiltrate of mild to moderate intensity... Immunohistochemical study: Immunopositivity for CAM5.2 and also for cytokeratin 34 Beta E12, of lower intensity. Granular cytoplasmic positivity for HepPar 1. Remaining performed markers (cytokeratin 20, p63 and TTF1) were negative. The morphology and immunohistochemical profile of this tumor are similar to the bone metastasis. Conclusion: Bronchial involvement by hepatoid-type carcinoma. " (fig. 2) This biopsy led to the ultimate diagnosis of hepatoid adenocarcinoma of the lung. During the ulterior month, the patient presented an important deterioration of his condition, and died 3 months after the diagnosis.

Discussion

Hepatoid adenocarcinoma of the lung is a rare entity, and given its wide-ranging presentation forms, its diagnosis and treatment has been difficult, only made easy by immunohistochemical analysis[1]. It is defined as an AFP-producing carcinoma, with the presence of typical tubular or papillary adenocarcinoma cells. Tumor cells have abundant eosinophilic cytoplasm, central nuclei, similar to liver tumor cells, as well as hyaline bodies[3].

Several studies have shown this tumor ablity to produce albumin, ferritin, transferrin and alpha-fetoprotein, commonly produced substances by liver cells[1]. Patients with this kind of cancer are usually male and smokers, being usually diagnosed at an advanced stage of the disease[1,6]. Recently, the diagnostic criteria for this cancer included the presence of elevated levels of alpha-fetoprotein. However, quite a few studies have shown that AFP is not specific for hepatoid adenocarcinoma of the lung, being more frequently associated to hepatocellular carcinoma and cholangiocarcinoma[1]. In a study by Haninger D. et al[2], no more than 3 out of 5 evaluated cases expressed alpha-fetoprotein, though all cases showed positivity for HepPar 1, HEA 125 and MOC31. An elementar step, is to exclude hepatic metastases, since it may create a confusional factor. Meanwhile, new diagnostic criteria for hepatoid adenocarcinoma of the lung have been proposed: 1: The tumor may only have characteristics of hepatoid adenocarcinoma or present components of typical papillary or acinar adenocarcinoma, signet ring cells or neuroendocrine carcinoma; 2: The expression of alpha-fetoprotein is not mandatory for the diagnosis, as long as other immunohistochemical markers of hepatic differentiation are expressed[2,6]. Therefore, the presented case meets criteria for the diagnosis of hepatoid adenocarcinoma of the lung. Even though not expressing AFP, it reveals histological characteristics of hepatoid carcinoma and positivity for the hepatic cell specific marker HepPar 1. On the other hand, the study carried out during hospitalization made it possible to exclude hepatic metastases.

The prognosis for hepatoid adenocarcinoma of the lung is generally gloomy, with an average life expectancy ranging from 7 months to 7 years in patients undergoing surgery. There is however a description of a 9-year survival case[6].

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