

Metastatic Lung Adenocarcinoma to the Appendix: A Case Report

Carlos Camilo Neto¹, Sabrina Hashimoto Kato¹, Clóvis Antônio Lopes Pinto^{2,3*}, Geovane Ribeiro dos Santos^{3,4}, Aldo Lourenço Abbade Dettino¹ and Raphael Cruz Seabra Prudente⁵

¹Oncology Medical Clinic Hospital, A.C. Camargo, Sao Paulo (SP), Brazil

²Pathological Anatomy Service of Hospital A.C. Camargo, Sao Paulo (SP), Brazil

³Department of Morphology and Pathology, Faculty of Medicine of Jundiaí (FMJ), University in Jundiaí, Jundiaí, Sao Paulo (SP), Brazil

⁴Institute of Health Sciences-Universidade Paulista-UNIP (Campus Jundiaí), Jundiaí, Sao Paulo (SP), Brazil

⁵Faculty of Medicine of Jundiaí (FMJ), University in Jundiaí, Jundiaí, Sao Paulo (SP), Brazil

Abstract

There are few reported cases in the literature of metastasis to the appendix. A 44-year-old patient presented with abdominal pain and changes in the bowel pattern. Thoracic and abdominal computed tomography scans evidenced pulmonary and liver nodules. The pulmonary nodule was biopsied and the hematoxylin-and-eosin (HE) stained slides showed an adenocarcinoma. The immunohistochemistry profile demonstrated positivity for CK7 and TTF-1. The patient underwent an appendectomy. HE stained slides also demonstrated adenocarcinoma infiltrating the entire appendix wall along with the epithelial surface with immunohistochemistry study of the appendix neoplasm showing exactly the same results as seen in the first panel.

Keywords: Adenocarcinoma; Lung; Appendix; Metastasis; Immunohistochemistry

Introduction

Lung adenocarcinoma is the most common cancer in the world population with about 1.1 million deaths a year worldwide and 85%-90% of cases are related to smoking [1]. The main sites of metastasis of lung cancer are liver, other areas of the lung, adrenal glands, bone, bone marrow, kidney and central nervous system [1,2]. The cancer of the appendix are uncommon, being more common in carcinoid tumors [3,4], accounting for approximately 0.52% of the diseases of this organ [3]. Appendicular Metastases are rare with few cases described in the literature and the main primary sites are the gastrointestinal tract, breast, female genital tract and lung [2,5,6]. The immunohistochemistry represent a tool for diagnosis the site of the tumor. The use of the CK-20, CK-7 cytokeratins and TTF-1 is done to discern whether the lesion is primary pulmonary (CK-7 (+), TTF-1 (+) and CK-20 (-)) or metastatic digestive tract (CK-7 (-), TTF-1(-) and CK-20 (+)) [7,8].

Case Report

Male patient, 44, smoker, 25 years/pack, having stopped 5 years in outpatient treatment with Clexane[®] due to prior deep vein thrombosis. Complained of abdominal pain and changes in bowel habits there is four months. Initially it was treated with symptomatic drugs, but without improvement. Showed increased abdominal volume being admitted to another institution for diagnostic investigation. Began the research with colonoscopy that showed one substenosis in the colon, at the level of the splenic flexure, preventing the progression of the device, without changes in the colonic mucosa. It underwent computed tomography (C) of the chest and abdomen which revealed bilateral pulmonary nodules, the largest in the right upper lobe, spiculated, measuring 2.7 cm in major axis and multiple secondary aspect of liver damage with peritoneal implants.

Was made Biopsy of pulmonary nodule by bronchoscopy, with study histopathologic and immunohistochemical.

At this time, the patient came to our institution for management and treatment. We proceed to the review of blades of lung lesion. The blade HE (Figure 1) was constituted by the material measuring 0.4 cm, composed of glandular formations, nuclear atypia and architectural disarray, with areas forming mucus and interstitial desmoplasia compatible with adenocarcinoma.

The neoplastic cells were positive for antibodies CK7 and TTF-1 and negative for CK20, P63, CDX-2, CA19.9, PSA (Table 1), confirming the origin of lung cancer (Figure 2).

The patient evolved with globus abdomen and distended, without palpable and mild edema and lymphadenopathy of the lower limbs. Subjected to new complementary tests for staging and conduct.

CT of the abdomen and pelvis showed hypodense liver nodules, scattered, especially in the segment IV, the largest with 4.0 cm in major axis. Moreover, showed hepatic cysts in the segment II, with 1.9 cm and in the segment IV, with 1.7 cm, besides of signs of peritoneal carcinomatosis and small volume ascites. Chest CT also showed filling defects in the left pulmonary artery, with parenchymal opacities in lingular segments, upper and basal posterior of left lower lobe, compatible with myocardial heart attack areas. Also observed pleural effusion in moderate amount a right and laminar a left. Moreover, it was observed absence of lymphadenopathy. Bone scintigraphy showed focal hyper-concentration of radiotracer in moderate amount in the lumbar spine, in the projection of L1, L4 and L5, in proximal segment of the right femur. Echocardiogram observed diastolic left ventricular dysfunction, grade I (abnormal relaxation), LVEF=63% without signs of pulmonary hypertension. The Ultrasound of the lower limbs showed right vein thrombosis signs of common femoral vein and thrombophlebitis of right great saphenous vein. Done new colonoscopy to attempt to intestinal unblocking, without success. It was decided surgical correction and filter placement in the below cava vein, since it would no longer be treated with anticoagulants, to perform the laparotomy.

Laparotomy was performed, with bypass sigmoid ileum, large colon

***Corresponding authors:** Clovis Antonio Lopes Pinto, Department of Morphology and Pathology, Faculty of Medicine of Jundiaí (FMJ), University in Jundiaí, Jundiaí, Sao Paulo (SP), Brazil, Tel: 55(11)3395-2129; E-mail: patologia@fmj.br

Received December 13, 2016; **Accepted** January 10, 2016; **Published** January 17, 2016

Citation: Neto CC, Kato SH, Pinto CAL, Santos GRD, Dettino ALA, et al. (2017) Metastatic Lung Adenocarcinoma to the Appendix: A Case Report. J Pulm Respir Med 6: 386. doi: [10.4172/2161-105X.1000386](https://doi.org/10.4172/2161-105X.1000386)

Copyright: © 2016 Neto CC, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

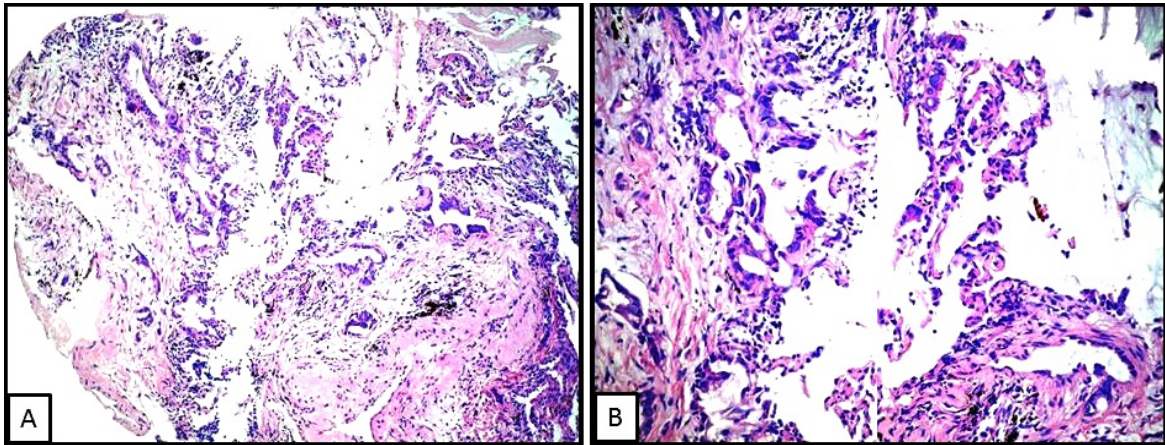


Figure 1: (A) Neoplasia with glandular formations and Desmoplasia (HE.100X); (B) atypical glands with architectural remodelling and production of mucus in the interstices (HE.200X).

Antibody	Clone	Dilution	Brand	Results
CK-7	OV-TL 12/30	Ready-to-use	DAKO	Positive
TTF-1	8G7G3/1	Ready-to-use	DAKO	Positive
CK-20	Ks20.8	Ready-to-use	DAKO	Negative
CDX-2	DAK-CDX-2	Ready-to-use	DAKO	Negative

Table 1: Results of the immunohistochemistry biomarkers.

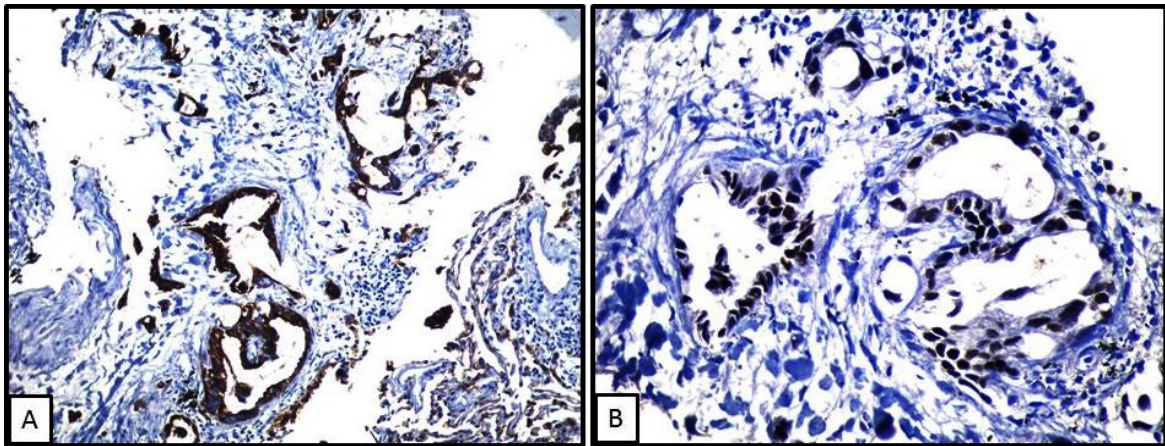


Figure 2: (A) Immunohistochemical study showing cytoplasmic positivity for CK7 (200X); (B) nuclear standard for TTF1 (400X).

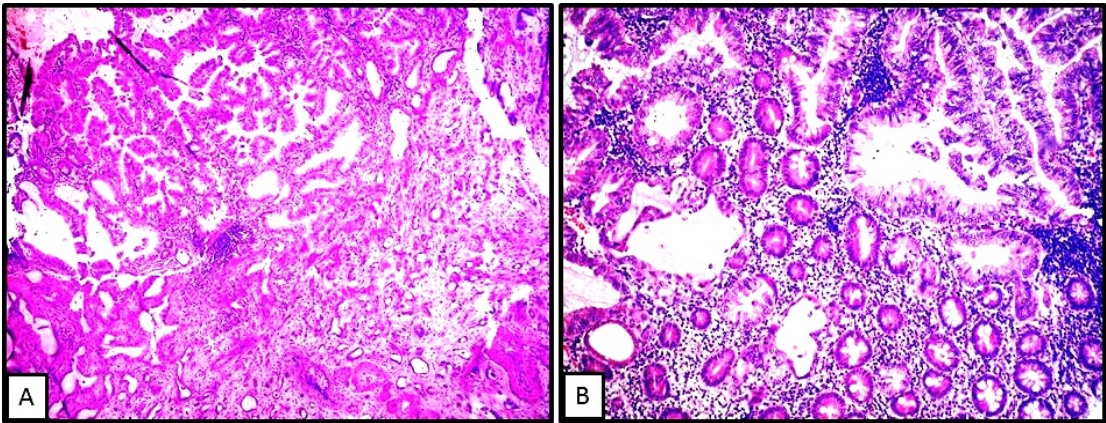


Figure 3: (A) Neoplasia trespassing the wall of appendix and reaching the appendiceal epithelium, above left (40X); (B) colonization of epithelium by neoplasia, below, with remaining glands appendix (100X).

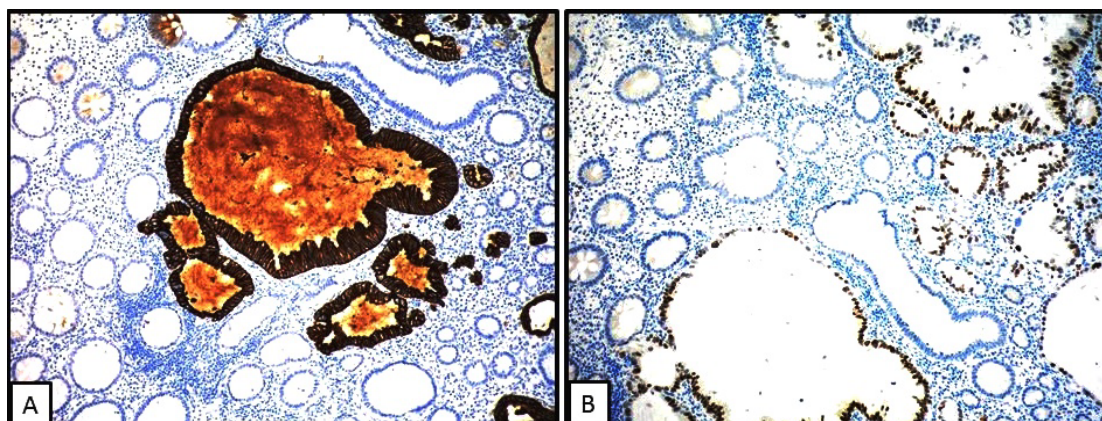


Figure 4: (A) Immunohistochemical study showing cytoplasmic positivity for CK7 in neoplastic glands and negative in mucosal glands of appendix (100X); (B) nuclear standard for TTF1 (100X).

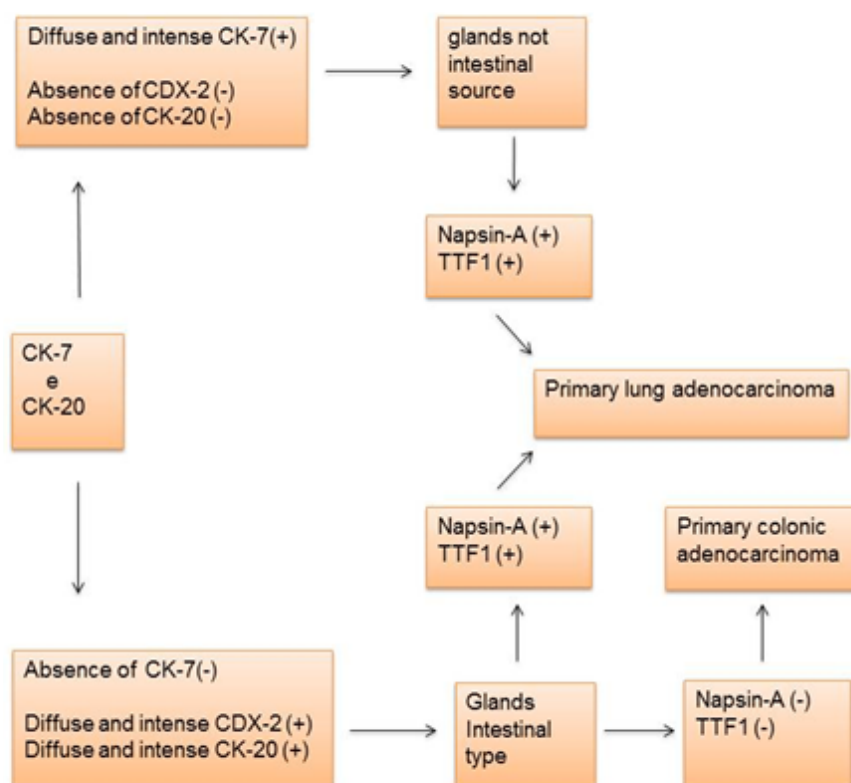


Figure 5: Immunohistochemical differentiation algorithm for adenocarcinomas of colon and lung.

biopsy and appendectomy, because found itself appendix enlarged in macroscopic. Both materials were received by pathology and fixed in 10% formalin. Posteriorly, was performed the Macroscopic analysis of materials. Macroscopically, the appendix average 5.0 cm long and 1.5 cm thick with thick walls measuring 0.4 cm and containing mucinous material in the light. The Fragment of omentum average 3.0 cm in major axis. Morphological examination of the appendix, for the HE technique, showed infiltration across the wall areas for producing adenocarcinoma of mucus and colonization of the epithelium by neoplastic cells appendicular, simulating primary tumor (Figure 3).

It was requested immunohistochemical study with positivity for CK7 and TTF1 (Figure 4) and negativity for the other markers (Figure

5), confirming the origin of metastatic cancer. The patient was stabilized and taken to chemotherapy and radiotherapy anti allergic of lumbar spine.

Discussion

The lung adenocarcinomas generally exhibit lymphatic metastases and hematogenous route, with approximately 20% of cases with metastasis a distance, being the most common site liver, accounts for 39.3% of cases, followed by the adrenal 7% to 33.5%. Lung carcinoma metastasis to the appendix is rare, with few cases described in the literature. Major publications on appendectomies such as Marudanayagam with 2660 procedures, showed only five cases (0.18%) resulting from metastatic disease, and all with gastric origin of neoplasia

[3]. Khan and contributors published a study of 3374 procedures and not have any case related to metastasis to the appendix [9]. In another retrospective study of 1492 cases, only one was consequent to metastases [10]. Metastases to the appendix usually begin in serous the organ [4,11], and only will cause symptoms with hover obstruction of light or organ drilling. There are reports in the literature a cases of lung carcinoma metastases to the appendage, between them, small cell lung carcinomas (oat-cell) [4,12] and adenocarcinomas [6,11], with often a difficult diagnosis, since the first manifestation of disease are appendicitis symptoms, even without the colonization of the epithelium by metastasis [11]. In the case reported, although there was colonization of wall and of appendiceal epithelium by neoplastic cells, there was no obstruction of light and even perforation of the wall, thus being the incidental diagnosis during surgery.

In summary, it is important to bear in mind the diagnosis of appendiceal metastasis in cases of clinical manifestations suggestive of appendicitis or unexplained increase the organ, especially in cases of patients with cancer history.

References

1. Travis WD, Brambilla E, Burke AP, Marx A, Nicholson AG (2004) WHO Classification of Tumours. Pathology and Genetics of Tumours of Lung, Pleura, Thymus and Heart. Lyon, France: IARC Press.
2. Rosai J (2004) Surgical Pathology. Philadelphia, USA: Mosby, pp: 359-458.
3. Marudanayagam R, Williams GT, Rees BI (2006) Review of the pathological results of 2660 appendectomy specimens. *J Gastroenterol* 41: 745-749.
4. Pang LC (1988) Metastasis-induced acute appendicitis in small cell bronchogenic carcinoma. *South Med J* 81: 1461-1462.
5. Fenoglio-Preiser CM, Stemmermann G, Rilke F, Noffsinger A, Listrom M, et al. (2008) *Gastrointestinal Pathology. An Atlas and Text*. Philadelphia, USA: Lippincott Williams & Wilkins, pp: 525-541.
6. Haid M, Larson R, Christ M (1992) Metastasis from adenocarcinoma of the lung producing acute appendicitis. *South Med J* 85: 319-321.
7. Capelozzi, VL (2009) Role of immunohistochemistry in the diagnosis of lung cancer. *J Bras Pneumol* 35: 375-382.
8. Galluzzi S, Payne PM (1955) Bronchial carcinoma: a statistical study of 741 necropsies with special reference to the distribution of blood-borne metastases. *Br J Cancer* 9: 511-527.
9. Khan GM, Grillo IA, Abu-Eshy SA, Khan AR, Mubarak J, et al. (2000) Pathology of the appendix. *J Natl Med Assoc* 92: 533-535.
10. Ma KW, Chia NH, Yeung HW, Cheung MT (2010) If not appendicitis, then what else can it be? A retrospective review of 1492 appendectomies. *Hong Kong Med J* 16: 12-17.
11. Miyazaki K, Satoh H, Sekizawa K (2005) Metastasis to appendix from lung adenocarcinoma. *Int J Gastrointest Cancer* 36: 59-60.
12. González-Vela MC, García-Valtuille AI, Fernández FA, Val-Bernal JF (1996) Metastasis from small cell carcinoma of the lung producing acute appendicitis. *Pathol Int* 46: 216-220.