Case Report **AJOHC (2022) 5:15**

American Journal of Histology and Cytology (ISSN:2637-5117)

"Two in One"- A rare case of neoplastic collision tumor

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ABSTRACT

Collision tumors are a rare group of tumoral pathologies characterized by their composition, which is based by the presence of two or more tumor types affecting the same anatomical site and separated by distinct tumor borders. These tumors may be a combination of either malignant or benign tumors [1]. Collision tumors are classified as independently coexisting neoplasms which have different genetic, behavioral, and histological features separated by a distinct demarcated border but coexist within the same organ [2]. These tumors tend to have distant immunohistochemical and morphological differences which aid in diagnosis, but can lead to confounding imaging findings, which in times, make diagnosis more challenging. According to literature this tumor tends to grow simultaneously or following each other in sequence of less than 2 months apart [3]. Accurate classification and diagnosis of these tumors is important for proper treatment options, as well as better patient outcomes. Here will be discussed a case of a rare form of collision tumor, compose of a primary lung adenocarcinoma with a mucosa-associated lymphoid tissue (MALT) lymphoma.

Keywords: Collision tumor, lung adenocarcinoma, lymphoma, combined tumor

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How to cite this article:
Vanessa Fonseca-Ferrer, Alba Rivera-Diaz, Luis-Gerena Montano, Christian Castillo- Latorre, Sulimar Morales-Colon, Andres Velazquez-Garcia, William Rodriguez-Cintron. "Two in One"- A rare case of neoplastic collision tumor. American Journal of Histology and Cytology, 2022, 5:15.

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Case Presentation:

A 77-year-old male with medical history of Hyperlipidemia, Emphysema, benign prostatic hyperplasia and former smoker (90 pack/year), who presented to the Emergency Department (ED) with complains of diffuse abdominal pain of four months of evolution, generalize malaise, decreased appetite and unintentional weight loss of 20 pounds in a one-month period. Upon review of system, patient denied any fever, chills, chest pain, palpitation, shortness of breath, nausea, vomiting, urinary or bowel changes. Physical examination was unremarkable, with no signs of cardiorespiratory distress. Patient hemodynamically stable and with 98% peripheral oxygen saturation at room air, in no acute distress. Laboratory pertinent for elevated leukocytosis of 304 X10-3/ul, without bandemia or shifting, decreased hemoglobin at 9.0 and thrombocytopenia of 387K with no signs of active bleeding. Chemistry with stable renal function and no major electrolyte disturbances suggestive of tumor lysis syndrome.

Based on the above findings, patient was started on Allopurinol, Septra and Acyclovir was started due to high suspicion of acute leukemic/lymphocytic process and antibiotic prophylaxis. Non-contrast Chest CT and Abdominal CT were performed and showed

were performed, with findings pertinent for a suspicious primary left upper Lung Lobe malignancy with small satellite nodules, and extensive mediastinal adenopathy that could be related to the primary or may be secondary to thoracic involvement of a Lymphoma. Evaluation of the abdomen and pelvis with extensive upper abdominal and retroperitoneal predominant lymphadenopathy suspicious for lymphoma. For further malignant process characterization, a PET/CT was done and showed severe hypermetabolic lesion on the left lung upper lobe lateral most likely a lung primary malignancy, as well as multiple mild metabolic lymphadenopathy of a different metabolic signature than the lung lesion, which suggest an indolent or low-grade lymphoproliferative disorder such as Chronic Lymphocytic Leukemia (CLL). CT guided biopsy of a 2.5cm left upper lobe nodule was successfully performed by Interventional Radiologist. Pathology results were pertinent for simultaneous presence of a Left Lung Acinar Adenocarcinoma, as well as a Mantle Cell Lymphoma (Collision Tumor). Bone marrow biopsy results as well as flow cytometry showed Mantle Cell Lymphoma positive for CD5 and negative for CD23. Left Lung Acinar Adenocarcinoma at Stage 1 and negative for EGFR, ALK and KRAS markers.

Bendamustine and Rituxan therapy was started as recommended by Hema/Onc, achieving a good clinical response. No signs of TLS were observed after therapy was started. Radiotherapy service evaluated the patient and recommended combined chemo-RT to complete 33 sessions of radiotherapy. Pulmonary Services evaluated the patient and stated that because patient had active lymphoma, Endobrochial Ultrasound (EBUS) for mediastinal biopsy was not indicated, but will be consider, once patient completes radiotherapy. Chest Imaging will be repeated after chemo-RT to reassess the possibility of curative, in view of localized lung adenocarcinoma Stage I.

Histopathology Findings:

Discussion:

Collision tumors of the lung are sometimes described as synchronous lung cancers and the exact incidence of collision of synchronous lung carcinomas in unknown but given that 4–20% of patients with lung cancer have multiple primary tumors, the odds of two tumors occurring immediately-adjacent to each other are not negligible [4] Collision tumors are inapparent on gross or

radiological examination. The microscopic examination is what generally leads to the diagnosis. Synchronous lung adenocarcinomas are extremely challenging as these tumors are highly heterogenous [5]. After comprehensive clinical review, few cases of pulmonary adenocarcinoma and Lymphoma have been reported. Most cases of synchronized lymphoma and other neoplasm localized at the same anatomical site, involves the thyroid, stomach, throat, kidney and tonsils. According to literature, the most common lymphoma to be present is the B cell Lymphoma and the majority of cases present in middle age male patients.

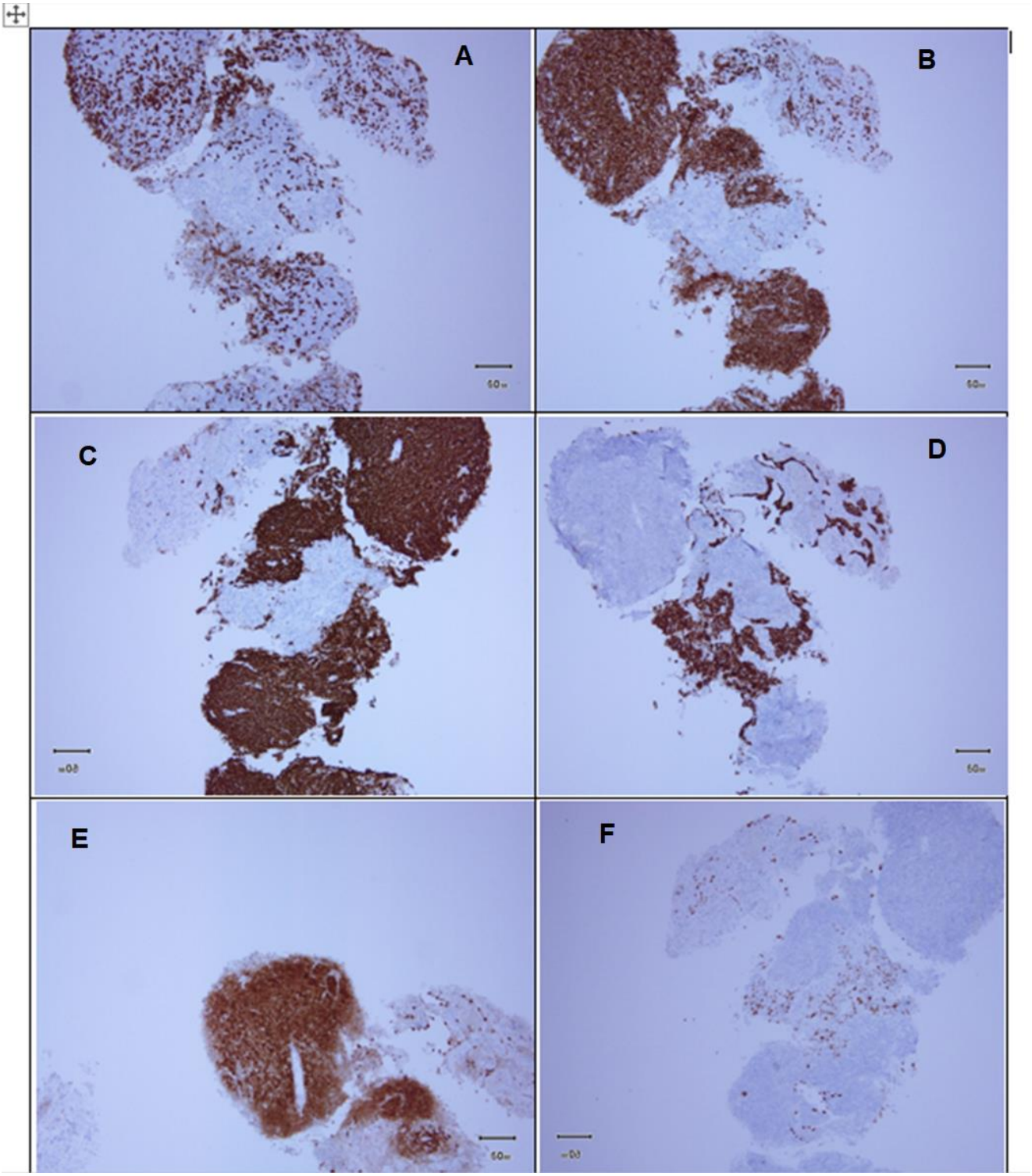

Figure: (A) CD3, (B) CD5, (C) CD20, (D) CK7, (E) Cyclin D1, (F) TTF-1

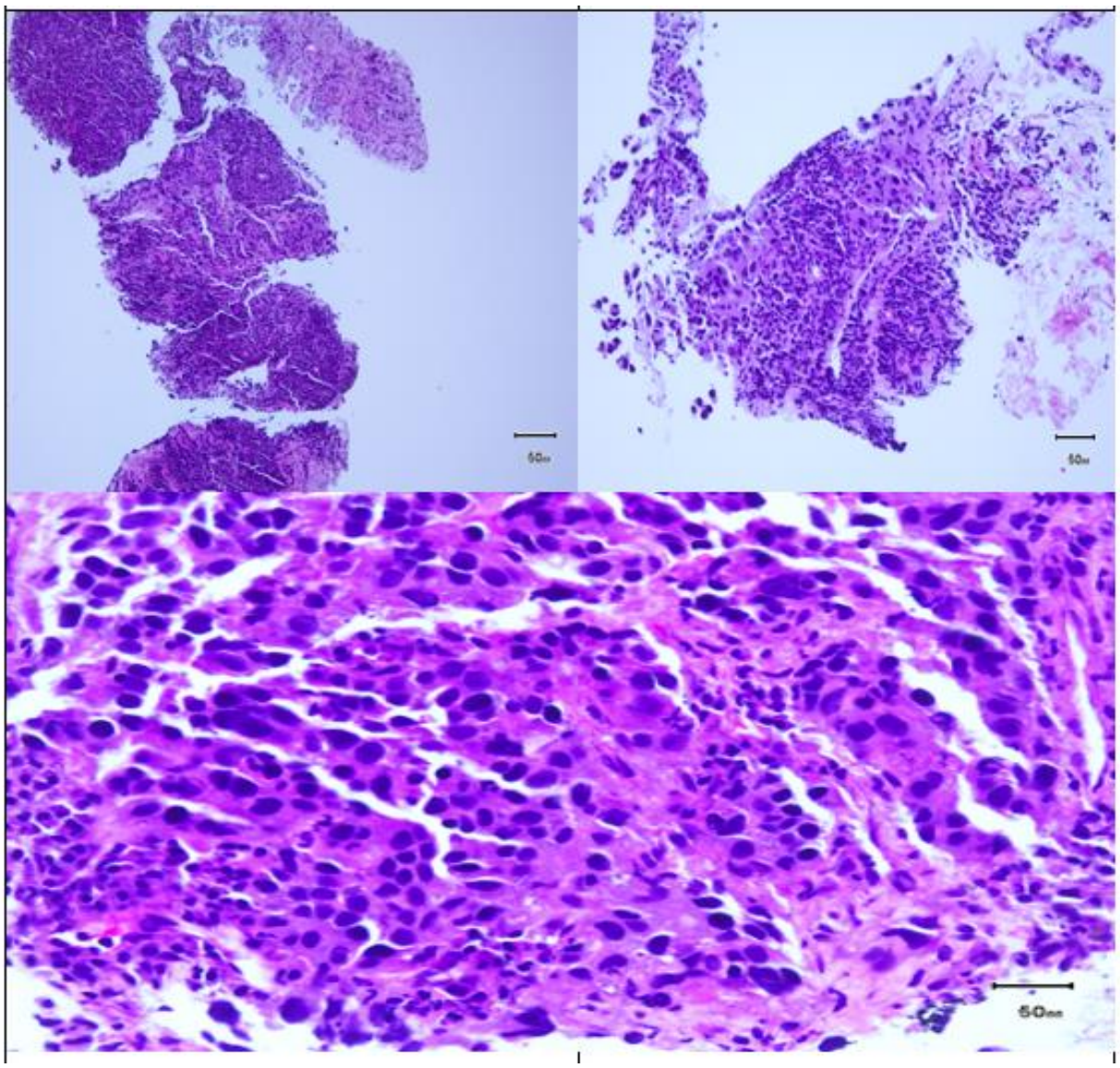

Figure: Histopathology H&E cell block

The pathophysiology of collision tumors is still unknow, but it is believed that they arise form two different clones of neoplastic cells [1]. Preoperative diagnosis of these form of tumors is very difficult and there is no established grading, staging, treatment, or prognosis for collision tumor. Prognosis is mainly determined by the most aggressive tumor. Several theories exist to explain the pathogenesis of these tumors. It is thought it may be due to the accumulation of inflammatory cells from one tumors, leading to the development of another tumor. Another theory is that both tumors may arise from the same stem cells or from mutations to the RAS gene that lead to multiple tumors forms.

Treatment of synchronized neoplasm is very complex and may include observation, resection, radiotherapy or chemotherapy in disseminated or bulky tumors. Clinicians should be aware of these infrequent tumors who serve as a challenge in determining cancer behavior from differentiation, tumorigenesis, and prognosis.

Acknowledgement:

We would like to acknowledge the Department of “Pulmonary and Critical Care Fellowship Program at VA Caribbean Health Care System, San Juan, Puerto Rico. We have no conflict of interest to declare. This statement is to certify that all authors have seen and approved the manuscript being submitted.

Conflict of Interest:

There is no conflict of interest.

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