Lung neuroendocrine tumor. A case report

Miguel de Jesús Vásquez M.D.
Raúl Verano Esparza M.D.
Javier Del Bosque Cárdenas M.D.
Ricardo Verano Esparza M.D.
Jonhy Robles M.D.
Raul Gamez Gaytan M.D.

Background:
Lung neuroendocrine tumors are a small group of neoplasms that arise from specialized, peptide and amine-producing cells, specifically from bronchial Kulchitsky cells. They are clinically relevant because they are steadily increasing year by year and they remain poorly understood by clinicians. We detailed a case of a 46-year-old male with a lung neuroendocrine tumor who underwent a right middle pulmonary lobe resection with favorable clinical outcomes, focusing on the diagnostic pathway and surgical management.

Keywords: Neuroendocrine lung tumor (LNET), Lung Tumor, Lobectomy, Kulchitsky cells.

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Case Report

General Surgery

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Over the years, lung cancer diagnosis and treatment have evolved, identifying more precise molecular subtypes, and consequently improving the clinical outcomes. Compared to the lung adenocarcinoma group, there is a small group that includes neuroendocrine tumors (NETs); these tumors arise from specialized, peptide and amineproducing cells dispersed throughout the diffuse endocrine system. Lung NETs are the second most common site for NETs after the gastrointestinal (GI)system, accounting for 30.6% of all NETs. Some databases report the incidence of neuroendocrine tumors, including lung, in the United States is steadily increasing, and currently 2000 to 4500 patients are diagnosed with a lung NET every year,1 which amounts to 1% to 2% of all lung cancers. Because of their variable clinical history and rarity, lung NETS remains a poorly understood disease, being a challenge to make a correct diagnosis and adequate surgical management.

Case report

A 46-year-old asymptomatic male attended his regular medical check, he has a significant history of diabetes and a post-COVID-19 syndrome, and he denies previous surgeries or allergies. A routine chest x-ray was performed dueto the previously described clinical history,with the incidental finding of a right parahilar mass, therefore he was referredto the cardiothoracic surgery department. Thorax CT was requested for a completeevaluation, reporting a right perihilar mass,an ipsilateral pleural effusion, and multipleperihilar adenopathies. (**Figure 1**) The patient underwent lobectomy of the right middle pulmonary lobe under general anesthesia and one-lung ventilation, no transsurgical complications or incidents were reported, with the following findings: the right middle pulmonary lobe was resected with dimensions of approximately13 x 9 x 4 cm, covered by pleura. He was admitted to the intensive care unit after the surgery for postoperative cardiopulmonary care with a favorable clinical evolution and was discharged on the third postoperative day. His hospital surveillance was continued without incidents or complications and he was discharged on the seventh postoperative care day.

This patient was diagnosed with a lung tumor during a routine medical check-up, elective surgical management was offeredand accepted, performing medial right lobectomy due to a para hilar mass, and no trans-surgical incidents orcomplications were reported. He was admitted to the ICU for post-operative care and discharged from the ICU on the third postoperative day. He was later discharged home on the seventhpostoperative day. Currently, the patient is at home, with no respiratory complications, ECOG 0, and under routine surveillance. The specimen sent to pathology reports: a3 x 3 cm lung neuroendocrine tumor, with intermediate grade of differentiation.

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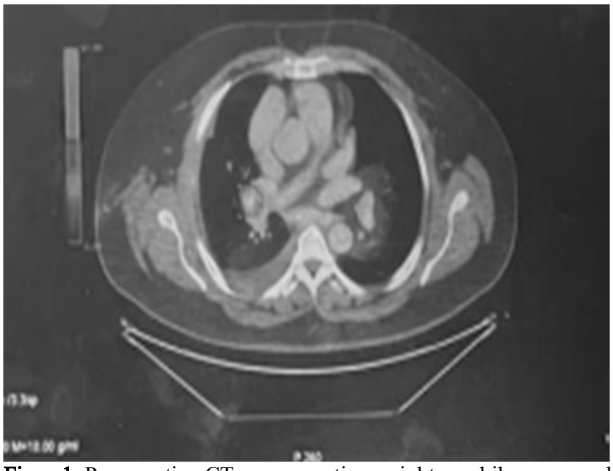

Figure1. Preoperative CT scan reporting a right parahilar mass and an ipsilateral pleural effusion.

Discussion

Neuroendocrine lung tumors represent around 24 - 30% of primary lung cancer cases. These derive from the uncontrolled proliferation of neuroendocrine cells from pluripotent cells responsible for the production of neurotransmitters. They are classified into 3 grades, Low grade (Typical Carcinoids), Intermediate (Atypical Carcinoids), and High grade (Non-small cell neuroendocrine carcinoma and small cell carcinoma). In 50% of cases, it presents asymptomatically as described in this casewhere the diagnosis occurs incidentally through an abnormal image on a simple chest X-ray. For a better definition, a chest CT scan was performed where they reported a right parahilar mass, right pleural effusion as well as parahilar lymphadenopathy. In retrospective studies, the most frequent location is the right middle lobe, as compatible with our patient. Given the deficiencies of resources, it was not possible to carry out fiberoptic bronchoscopy where it is possible to observe and take biopsies of the lesion, nor preoperative PET-SCAN to rule out the presence of an extrapulmonary primary tumor. The treatment of choice is individualized according to the stage in which it is classified. In both low and intermediate grades, lobectomy is the best choice. However, they have a poor response to chemotherapy, although it varies, this mainly depends on the grade in which it was first classified. In both low and intermediate grades, lobectomy presents asurvival of more than 20 years vs. limited resection of the tumor with a survival of 15 years.

Conclusion

Lung NETs are the second most prevalent location after the gastrointestinal (GI) system. According to some databases, the number of patients receiving a lung NET diagnosis each year in the United States is continuously rising. These result from

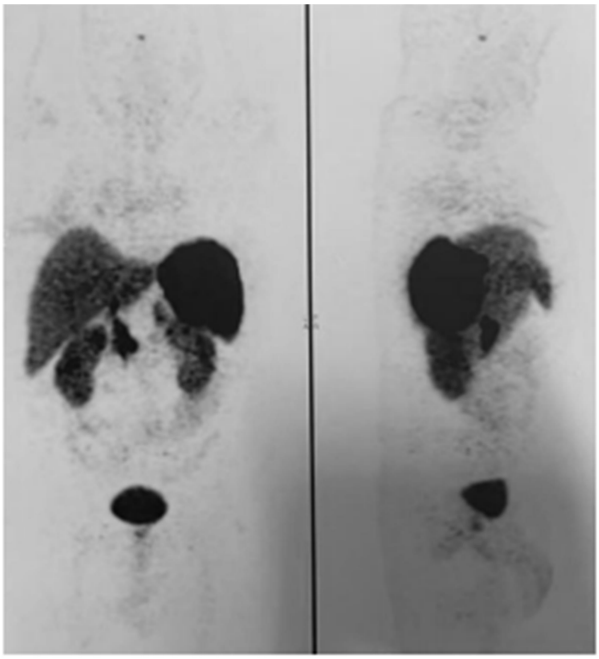

Figure 2. Postoperative PET - CT reporting increased metabolism in the right hemithorax and multiple mediastinal adenopathies.

the unchecked growth of neuroendocrine cells, which are derived from pluripotent cells and secrete neurotransmitters. During a routine check-up, the patient's lung tumor was discovered. Elective surgical care was provided and agreed upon, and a medial right lobectomy was performed due to a parahilar mass. No trans-surgical and no transsurgical incidents or complications were reported. The patient is at home, with no respiratorycomplications, under follow-up.

Conflicts of interests

There was no conflict of interest during the study, and it was not funded by any organization.

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Miguel de Jesús Vásquez
Third year resident of general surgery
Zone #1 General Hospital IMSS
Saltillo, Coahuila

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