Bronchial Carcinoid Tumor

Lung carcinoma is typically divided into two categories, small cell carcinoma and non-small cell carcinoma. Non-small cell carcinoma subtypes include adenocarcinoma, squamous cell carcinoma, large cell carcinoma and carcinoid tumor. Bronchial carcinoid tumor is a neuroendocrine tumor that carries an excellent prognosis. It may be asymptomatic or may present with symptoms of bronchial obstruction such as coughing or hemoptysis. Occasionally, bronchial carcinoid tumors may cause carcinoid syndrome which is characterized by flushing, diarrhea and wheezing. These tumors are chromogranin A positive and histology shows nests of neuroendocrine cells. Additionally, patients will have elevated urine 5-HIAA when carcinoid syndrome is present. Treatment includes surgical resection and octreotide for symptomatic relief.



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Characteristics

Excellent Prognosis
Doctor with Excellent Prognosis
Most subtypes of bronchial carcinoid tumor are slow growing neoplasms that rarely metastasize. Therefore, they have an excellent prognosis with a projected 5-year survival rate ranging from 50-90% depending on stage when diagnosed.

Signs and Symptoms

Symptoms of Bronchial Obstruction
Broccoli Obstructed
Since the majority of tumors are located in the proximal airways, symptoms may arise from an obstructing mass. Patients may present with coughing, wheezing, hemoptysis or recurrent pneumonia due to bronchial obstruction.

Often Asymptomatic
Thumbs-up
Many patients with bronchial carcinoid tumor are asymptomatic at the time of discovery.

Carcinoid Syndrome
Cars-in-droid
Carcinoid syndrome is caused by systemic release of vasoactive substances including serotonin (5-HT) and kallikrein. Bronchial carcinoid tumors typically produce lesser quantities of serotonin than midgut carcinoid tumors, accounting for a lower rate of carcinoid syndrome. In order to cause carcinoid syndrome, a tumor must produce such a large amount of vasoactive 5-HT that it overwhelms the ability of the liver to metabolize all of it or the 5-HT avoids hepatic degradation by originating from a tumor in the lung or a direct metastasis to the liver .

Diarrhea
Toilet
Carcinoid syndrome typically causes a secretory diarrhea with abdominal cramping. Severe diarrhea can cause electrolyte disturbances and dehydration.

Wheezing
Weasel
Wheezing caused by bronchoconstriction is a common symptom of carcinoid syndrome. The pathogenesis is thought to be due to excess serotonin.

Flushing
Flashlight
Flushing of the skin, most often of the head and upper thorax, is the most important clinical finding of carcinoid syndrome. Flushing is caused by secretion of kallikrein, which plays a role in the conversion of kininogen to bradykinin, a powerful vasodilator. Vasodilation of the skin results in flushing.

Diagnosis

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5-HIAA in Urine

(5) Hand HIAA-karate-chop Urinal

5-HIAA is the main metabolite of serotonin. In 24 hour urine samples, 5-HIAA is used to determine serotonin levels in the body. High levels of urine 5-HIAA provide strong evidence for carcinoid syndrome. Niacin deficiency from excessive consumption of the vitamin to produce serotonin is another clue for diagnosis of carcinoid syndrome.

Nests of Neuroendocrine Cells

Nest of Neuron-indy-car

Carcinoid tumors are slow growing tumors derived from neuroendocrine cells. These tumors are diagnosed by the presence of nests of neuroendocrine cells, which can be visualized by electron microscopy.

Chromogranin A Positive

Chrome-grandma (A) Apple

Chromogranin A is a tumor marker used to detect the presence of tumors arising from neuroendocrine cells. It is used as an indicator for carcinoid tumor. Of note, it is also elevated in pheochromocytomas and pancreatic cancer.

Treatment

Surgical Resection

Surgeon

Non-small cell lung cancers that present early in the disease process are generally treated upfront with surgical resection. Patients with metastatic disease outside of the chest are not candidates for surgical resection. Even with a complete resection, recurrence is still possible.

Octreotide for Symptomatic Relief

Octo-tree-ride

For patients with carcinoid syndrome, octreotide can be prescribed for symptomatic relief. Octreotide is a long acting somatostatin analog (SSA). Somatostatin inhibits the secretion of a broad range of hormones. It acts by binding to somatostatin receptors, which are expressed on the majority of carcinoid tumors.

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