

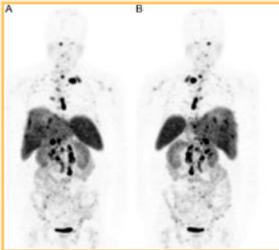
# Diagnosing carcinoid syndrome

When carcinoid syndrome is suspected, there are 2 types of tests that may be used for confirmation: diagnostic imaging and biomarker tests.<sup>1-3</sup>

## Imaging to confirm the presence of carcinoid tumors

Somatostatin receptor–based imaging tests are used to confirm the presence of carcinoid tumors.<sup>4,5</sup>

### Gallium Ga 68 dotatate PET<sup>4,6</sup>



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Gallium 68 is a positron-emitting isotope used to label a somatostatin analogue for imaging somatostatin receptor–expressing tumors, like NET, via positron emission tomography (PET).

### OCTREOSCAN<sup>TM</sup>5,7,8



Used with permission. Liang et al. *Radiol Case Rep*. 2007;2(3):90.

Octreoscan is an imaging agent for the scintigraphic localization of primary and metastatic NET that contain a higher density of somatostatin receptors.

Octreoscan is a trademark of Curium.

## Biomarker testing to confirm carcinoid syndrome

In addition to imaging, it's important to test for biochemical markers associated with carcinoid syndrome in order to make an accurate diagnosis.<sup>1,9,10</sup>



### 5-HYDROXYINDOLEACETIC ACID

The 5-hydroxyindoleacetic (5-HIAA) test is the principal laboratory test for measuring serotonin overproduced by carcinoid tumors. 5-HIAA is a metabolite of serotonin, which contributes to the diarrhea and dry flushing associated with carcinoid syndrome.<sup>1,11</sup>

- 5-HIAA levels are evaluated via a 24-hour urine specimen.<sup>1</sup>



### CHROMOGRANIN A

Chromogranin A (CgA) plasma levels are frequently elevated in patients with carcinoid tumors, although other conditions may result in elevations in CgA.<sup>10,12,13</sup>

- CgA levels are evaluated via a blood sample.<sup>13</sup>

# 5-HIAA is the key test to confirm carcinoid syndrome<sup>1,11</sup>



## 5-HIAA TESTING

Certain medications and serotonin-rich foods can affect urinary 5-HIAA levels and should be avoided prior to testing.<sup>1,3</sup>

### Medications to avoid before the 5-HIAA test<sup>1,3</sup>

- Cough medicine with guaifenesin
- Salicylates
- Acetaminophen
- L-dopa

### Foods to avoid before the 5-HIAA test<sup>1,3,11</sup>

- Bananas
- Plantains
- Tomatoes
- Kiwifruits
- Walnuts
- Plums
- Pecans
- Avocados
- Eggplants
- Pineapples
- Hickory nuts

➔ **The presence of a carcinoid tumor, diarrhea, and flushing, along with elevated 5-HIAA levels, may indicate a diagnosis of carcinoid syndrome<sup>1,9,14</sup>**

Learn more about carcinoid syndrome

VISIT [WWW.CARCINOID.COM/HCP-RESOURCES](http://WWW.CARCINOID.COM/HCP-RESOURCES) ▶

**References:** 1. Jensen RT, Doherty GM. Carcinoid tumors and the carcinoid syndrome. In: DeVita VT Jr, Hellman S, Rosenberg SA, eds. *Cancer: Principles & Practice of Oncology*. 7th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2005:1559-1574. 2. Creutzfeldt W. Carcinoid tumors: development of our knowledge. *World J Surg*. 1996;20(2):126-131. 3. Öberg K. Carcinoid tumors, carcinoid syndrome, and related disorders. In: Larsen PR, Kronenberg HM, Melmed S, Polonsky KS, eds. *Williams Textbook of Endocrinology*. 10th ed. Philadelphia, PA: WB Saunders Company; 2003:1857-1876. 4. Sadowski SM, Neychev V, Millo C, et al. Prospective study of 68Ga-DOTATATE positron emission tomography/computed tomography for detecting gastro-entero-pancreatic neuroendocrine tumors and unknown primary sites. *J Clin Oncol*. 2016;34(6):588-596. 5. Hanson MW. Scintigraphic evaluation of neuroendocrine tumors. *Appl Radiol*. 2001;30(6):11-17. 6. Mojtahedi A, Thamake S, Tworowska I, Ranganathan D, Delpassand ES. The value of 68Ga-DOTATATE PET/CT in diagnosis and management of neuroendocrine tumors compared to current FDA approved imaging modalities: a review of literature. *Am J Nucl Med Mol Imaging*. 2014;4(5):426-434. 7. Liang PS, Shaffer K. Metastatic gastrointestinal carcinoid tumor with unknown primary site. *J Radiol Case Rep*. 2007;2(3):90. doi:10.2484/rcr.v2i3.90. 8. Cossetti RJ, Bezerra RO, Gumz B, Telles A, Costa FP. Whole body diffusion for metastatic disease assessment in neuroendocrine carcinomas: comparison with OctreoScan® in two cases. *World J Surg Oncol*. 2012;10:82. 9. Mamikunian G, Vinik AI, O'Doriso TM, Woltering EA, Go VLW. Diagnosing and treating gastroenteropancreatic tumors, including ICD-9 codes. In: *Neuroendocrine Tumors: A Comprehensive Guide to Diagnosis and Management*. 4th ed. Inglewood, CA: Inter Science Institute; 2009:1-43. 10. Zuetenhorst JM, Taal BG. Metastatic carcinoid tumors: a clinical review. *Oncologist*. 2005;10(2):123-131. 11. McCormick D. Carcinoid tumors and syndrome. *Gastroenterol Nurs*. 2002;25(3):105-111. 12. Modlin IM, Kidd M, Latich I, Zikusoka MN, Shapiro MD. Current status of gastrointestinal carcinoids. *Gastroenterology*. 2005;128(16):1717-1751. 13. Stridsberg M, Eriksson B, Öberg K, Janson ET. A comparison between three commercial kits for chromogranin A measurements. *J Endocrinol*. 2003;177(2):337-341. 14. Anthony LB. Practical guide to supportive care of patients with functional neuroendocrine tumors. *Semin Oncol*. 2013;40(1):45-55.