5-HIAA levels are an important marker of carcinoid syndrome

- 24-hour urinary 5-hydroxyindoleacetic acid (5-HIAA) is a common biochemical test used to help diagnose carcinoid syndrome[1-3]
- Occurrence of carcinoid syndrome can be indicated by elevation of serotonin and its metabolite, 5-HIAA[1,4]
- Carcinoid syndrome generally occurs at an advanced stage of disease and may indicate the presence of liver metastases[3]

The severe diarrhea and flushing associated with metastatic carcinoid tumors are caused by elevated levels of serotonin, indicated by increased 5-HIAA[5,6]

Diarrhea and flushing are the 2 most commonly occurring symptoms of carcinoid syndrome.[2]

In patients with carcinoid syndrome

78% EXPERIENCED DIARRHEA[2]

94% EXPERIENCED FLUSHING[2]

It's important to measure 5-HIAA levels in your patients with carcinoid syndrome.[1-6]

INDICATIONS AND USAGE

Sandostatin® LAR Depot (octreotide acetate) for injectable suspension is indicated for long-term treatment of the severe diarrhea and flushing episodes associated with metastatic carcinoid tumors and long-term treatment of the profuse watery diarrhea associated with VIP-secreting tumors in patients in whom initial treatment with immediate-release Sandostatin® (octreotide acetate) Injection has been shown to be effective and tolerated. In patients with carcinoid syndrome and VIPomas, the effect of Sandostatin Injection and Sandostatin LAR Depot on tumor size, rate of growth, and development of metastases has not been determined.

HIGHLIGHTS OF IMPORTANT SAFETY INFORMATION

Warnings and Precautions: Treatment with Sandostatin LAR Depot may affect gallbladder function, with postmarketing reports of cholelithiasis (gallstones) resulting in complications; glucose metabolism; thyroid and cardiac function; and nutritional absorption (periodic monitoring is recommended). Cardiac function: use with caution in at-risk patients.

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Considerations for the 24-hour urinary 5-HIAA test

- Measurement of urinary 5-HIAA is a commonly used diagnostic test for carcinoid syndrome, with a sensitivity of 73% and a specificity of 100%[1]
- Proper preparation before the test is essential. Medication and dietary restrictions are required to prevent false-positive results[3,4]

After negative result in patients suspected of having carcinoid syndrome, follow-up 5-HIAA tests should be performed every 3 to 6 months.[3]

Talk to your patients about foods and medications that may interfere with the results of a 24-hour urinary 5-HIAA test.

Foods that can interfere with 5-HIAA testing[1,3,4]:

- Avocados
- Bananas
- Pecans
- Pineapples
- Walnuts/hickory nuts

Medications that can affect 5-HIAA testing[1,3]:

- Acetaminophen
- Salicylates
- Guaifenesin
- L-dopa

HIGHLIGHTS OF IMPORTANT SAFETY INFORMATION (continued)

Drug Interactions:

- The following drugs require monitoring and possible dose adjustment when used with Sandostatin® LAR Depot (octreotide acetate) for injectable suspension: cyclosporine, insulin, oral hypoglycemic agents, beta-blockers, and bromocriptine
- For lutetium Lu 177 dotatate injection: Discontinue Sandostatin LAR Depot at least 4 weeks prior to each lutetium Lu 177 dotatate dose

Adverse Reactions:

- The most common adverse reactions occurring in ≥20% of patients are back pain, fatigue, headache, abdominal pain, nausea, and dizziness.

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IMPORTANT SAFETY INFORMATION

Warnings and Precautions

- Gallbladder abnormalities may occur. There have been postmarketing reports of cholelithiasis (gallstones) resulting in complications, including cholecystitis, cholangitis, pancreatitis, and requiring cholecystectomy in patients taking Sandostatin® LAR Depot (octreotide acetate) for injectable suspension. Patients should be monitored periodically. If complications of cholelithiasis are suspected, discontinue Sandostatin LAR Depot and treat appropriately
- Glucose Metabolism: Hypoglycemia or hyperglycemia may occur. Blood glucose levels should be monitored when Sandostatin LAR Depot treatment is initiated or when the dose is altered. Anti-diabetic treatment should be adjusted accordingly
- Thyroid Function: Hypothyroidism may occur. Baseline and periodic assessment of thyroid function (TSH, total and/or free T4) is recommended
- Cardiac Function: Bradycardia, arrhythmia, conduction abnormalities, and other electrocardiogram changes may occur. The relationship of these events to octreotide acetate is not established because many of these patients have underlying cardiac disease. Use with caution in at-risk patients
- Nutrition: Octreotide may alter absorption of dietary fats. Monitoring of vitamin B_{12} levels is recommended during therapy with Sandostatin LAR Depot. Patients on total parenteral nutrition and octreotide should have periodic monitoring of zinc levels

Drug Interactions

- The following drugs require monitoring and possible dose adjustment when used with Sandostatin LAR Depot: cyclosporine, insulin, oral hypoglycemic agents, beta-blockers, and bromocriptine. Octreotide has been associated with alterations in nutrient absorption, so it may have an effect on absorption of orally administered drugs. Drugs mainly metabolized by CYP3A4 and which have a low therapeutic index should be used with caution
- Octreotide competitively binds to somatostatin receptors and may interfere with the efficacy of lutetium Lu 177 dotatate. Discontinue Sandostatin LAR Depot at least 4 weeks prior to each lutetium Lu 177 dotatate dose

Adverse Reactions

- The most common adverse reactions occurring in patients receiving Sandostatin LAR Depot are biliary abnormalities (62%), injection-site pain (20%-50%), nausea (24%-41%), abdominal pain (10%-35%), fatigue (8%-32%), headache (16%-30%), hyperglycemia (27%), back pain (8%-27%), constipation or vomiting (15%-21%), dizziness (18%-20%), sinus bradycardia (19%), pruritus (18%), upper respiratory tract infection (10%-18%), myalgia (4%-18%), flatulence (9%-16%), arthropathy (8%-15%), rash (15%), generalized pain (4%-15%), sinusitis (5%-12%), conduction abnormalities (9%), hypoglycemia (4%), and arrhythmia (3%)

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.** McCormick D. Carcinoid tumors and syndrome. *Gastroenterol Nurs*. 2002;25(3):105-111. **5.** Sandostatin LAR Depot [prescribing information]. East Hanover, NJ: Novartis Pharmaceuticals Corp; 2021. **6.** Rubin J, Ajani J, Schirmer W, et al. Octreotide acetate long-acting formulation versus open-label subcutaneous octreotide acetate in malignant carcinoid syndrome. *J Clin Oncol.* 1999;17(2):600-606.

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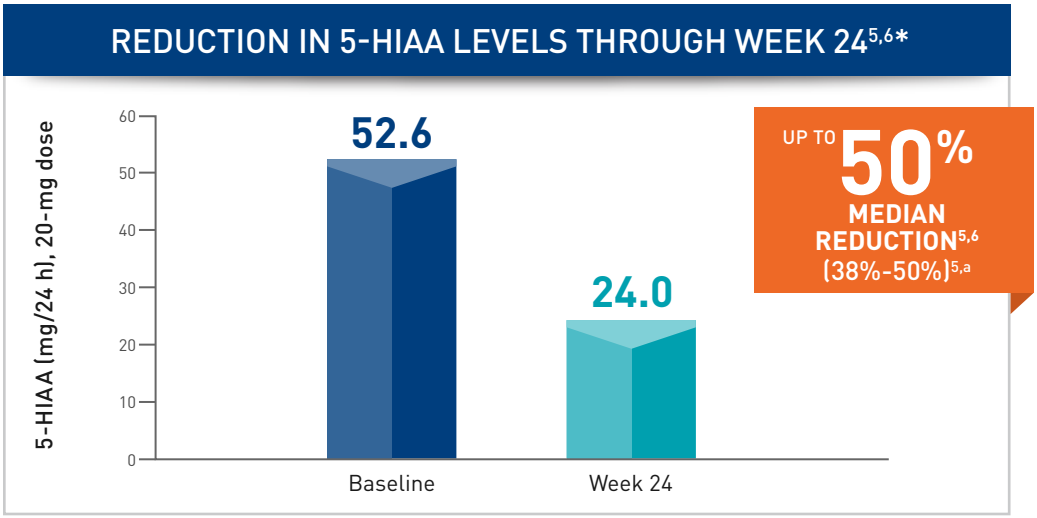
Reduction in 5-HIAA levels

For your patients with carcinoid syndrome, Sandostatin® LAR Depot (octreotide acetate) for injectable suspension targets somatostatin receptors to reduce 5-HIAA levels.[5,6]

- Sandostatin LAR Depot reduces 5-HIAA levels and controls the severe diarrhea and flushing associated with carcinoid syndrome[5,6]



Through week 24, mean reduction of the severe diarrhea and flushing associated with metastatic carcinoid tumors

- 42% mean reduction in severe diarrhea (30%–48%; N=92)[5,6]*
- 84% mean reduction in flushing (70%–90%; N=92)[5,6]*

[a]5-HIAA reductions are within the range reported in published literature for patients treated with octreotide (10% to 50%).

*A 6-month clinical trial of malignant carcinoid syndrome was performed in patients who previously had been shown to be responsive to Sandostatin® (octreotide acetate) Immediate-Release Injection. Patients received 10-mg, 20-mg, or 30-mg doses of Sandostatin LAR Depot every 28 days or continued their Sandostatin Immediate-Release Injection regimen. Patients receiving Sandostatin LAR Depot who experienced symptom flare-ups were permitted to use supplemental Sandostatin Immediate-Release Injection until symptoms were again controlled to screening frequency.[5,6]

5-HIAA reduction may indicate effective management of severe diarrhea and flushing related to metastatic carcinoid tumors.[1,4]

HIGHLIGHTS OF IMPORTANT SAFETY INFORMATION

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