Benefit of 68Ga-DOTATATE PET/CT

Nevertheless, the methodology of preparation of 68Ga-DOTATATE is well characterized and standardized for clinical practice upon stringent quality control testing [15]. Reubi et al. reported that the affinity of DOTATATE in binding SST2 to be approximately 10-fold higher than that of octreotide [16]. Souvatzoglou et al. showed that the additional accurate anatomical information provided by the CT component of PET/CT, can add significant value in the diagnosis and evaluation of therapy response due to functional and morphological information of the disease [17].

Haug et al. was the first study that evaluated the role of 68Ga-DOTATATE PET/CT in suspected neuroendocrine tumors and correlated it with gold standard pathology [18]. 68Ga-DOTATATE PET/CT identified NET in 29 of the 36 cases and excluded the presence of a NET in 61 of the 68 non-NET patients, indicating a sensitivity of 81% and specificity of 90%. In another study Haug et al. investigated the role of 68Ga-DOTATATE PET/CT in detection of metastatic lesions in patients with neuroendocrine cancer and compared it to gold standard pathology [19]. 68Ga-DOTATATE PET/CT helped to identify NET recurrence in 26 of 29 patients (sensitivity, 90%) and excluded the presence of recurrent NET in 28 of 34 patients (specificity, 82%). The accuracy calculated to be 86% (54 of 63). In gastroenteropancreatic NET (n = 45), the 68Ga-DOTATATE PET/CT showed to be more sensitive, specific and accurate. In this subgroup, sensitivity was 94%; specificity was 89%; and accuracy was 91%.

Srirajaskanthan et al. were the first group that compared the 68Ga-DOTATATE to Octreoscan [20]. They evaluated the diagnostic and management role of 68Ga-DOTATATE PET imaging in patients with neuroendocrine tumors and negative or equivocal findings on 111In-DTPA-octreotide scintigraphy. They showed that 68Ga-DOTATATE PET was positive in 41 of these 47 patients (87.2%). No false-positive lesions were identified. 68Ga-DOTATATE PET identified significantly more lesions than 111In-DTPA-octreotide scintigraphy (168 versus 27 respectively, P < 0.001). Hofman et al. [12] studied the impact of 68Ga-DOTATATE PET/CT for imaging neuroendocrine and other somatostatin expressing tumors and compared it to Octreoscan and conventional imaging. They demonstrated that 88% of 68Ga-DOTATATE PET/CT studies were positive.

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 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.

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.1,11

- 5-HIAA levels are evaluated via a 24-hour urine specimen.1

CHROMOGRANIN A

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

- CgA levels are evaluated via a blood sample.13

NET, neuroendocrine tumors.
5-HIAA is the key test to confirm carcinoid syndrome\textsuperscript{1,11}

5-HIAA TESTING
Certain medications and serotonin-rich foods can affect urinary 5-HIAA levels and should be avoided prior to testing.\textsuperscript{1,3}

\begin{itemize}
\item Cough medicine with guaifenesin
\item Salicylates
\item Acetaminophen
\item L-dopa
\end{itemize}

\begin{itemize}
\item Bananas
\item Plantains
\item Tomatoes
\item Kiwifruits
\item Walnuts
\item Plums
\item Pecans
\item Avocados
\item Eggplants
\item Pineapples
\item Hickory nuts
\end{itemize}

The presence of a carcinoid tumor, diarrhea, and flushing, along with elevated 5-HIAA levels, may indicate a diagnosis of carcinoid syndrome\textsuperscript{1,9,14}