IMAGE

^{68}Ga-DOTA TOC uptake in cervicothoracic ganglia: normal variant and incidental finding

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A 32-year-old female is a known case of rectal neuroendocrine tumor underwent surgical resection nine months back. Recently presented with abdominal pain and palpitation and referred for ^{68}Ga-DOTA TOC PET/CT for restaging. ^{68}Ga-DOTA TOC images showed increased tracer uptake in the bilateral stellate ganglia (Figure 1).

Somatostatin receptor scintigraphy with ^{68}Ga DOTA peptide PET is an established modality for imaging well-differentiated neuroendocrine tumors [1]. These peptides exhibit affinity to various somatostatin receptor subtypes. There are five known subtypes of somatostatin receptors (SSTRs) on cell surfaces, SSTR 1 to SSTR 5. The neuroendocrine tumors have a high affinity to SSTR2 [2]. ^{68}Ga DOTA peptide PET imaging is a very specific method, but it can accumulate in benign bone disease, inflammatory and granulomatous diseases, such as tuberculosis, sarcoidosis, or rheumatoid arthritis, as activated macrophages and lymphocytes express somatostatin receptors on their surface [3].

The stellate ganglion is also called a cervicothoracic ganglion and is formed by the fusion of the inferior cervical and superior thoracic sympathetic ganglion. It is located at the level of the C7 vertebra, anterior to the transverse process of the C7 vertebra and neck of the 1st rib, superior to the cervical pleura just below the subclavian artery. It is a long flat structure, and the shape is star-shaped (as referred to in its name stellate) due to the array of branches that diverge from the structure. Studies have shown the somatostatin receptor expression in the cervicothoracic (stellate) ganglia and has been reported in some studies [4]. The exact mechanism for their uptake is not yet fully understood, but it is believed to be related to the presence of somatostatin receptors on the ganglion cells. Somatostatin receptors are known to be expressed in various tissues, including nerves, and their expression in ganglia has been reported. Readers should be aware of this normal physiologic uptake within the stellate ganglia and should not be misinterpreted as pathologic lymph nodes and further investigations in this regard may not be necessary.

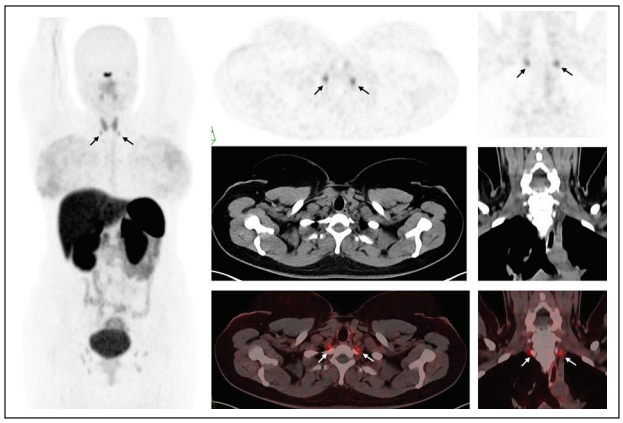

Figure 1. *^{68}Ga-DOTA TOC Maximum intensity projection (MIP) shows a bilateral increase in tracer uptake at the level of the cervicothoracic junction (black arrow). Cross-sectional PET/CT images confirm this focal uptake within a well-defined soft tissue density identified on the CT image at the level of cervicothoracic junction within the stellate ganglion with increased tracer uptake on fused images (white arrows). The note is made of a mild increase in tracer uptake in the prominent bilateral inguinal lymph nodes; likely inflammatory. No evidence of somatostatin avid disease.*

List of Abbreviations

CT	Computed tomography
PET	Positron emission tomography

Conflict of interest

The authors declare no conflict of interest.

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Consent to participate
Not applicable.

Consent of ethics
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