



Sympathetic Ganglia are More Frequently Visualized on 68Ga-Dotatate Total-Body PET/CT Imaging

¹Yasser G. Abdelhafez, ^{1,2}Elizabeth K. A. Triumbari, ^{1,3}Anna Calabro, ¹Lorenzo Nardo

¹Radiology, University of California - Davis, CA, USA, ²Fondazione Policlinico Universitario A. Gemelli IRCCS, Rome, Italy, ³University of Brescia and ASST Spedali Civili di Brescia, Brescia, Italy

INTRODUCTION: 68Ga-Dotatate uptake has been frequently seen in the stellate (cervico-thoracic) sympathetic ganglia¹. However, the relative frequency and uptake intensity of the other common sympathetic ganglia was not previously reported. In this work, we describe the frequency of visualization and uptake intensity of the ganglia on total-body EXPLORER scans compared to standard conventional scanners.

METHODS: A total of 27 patients (19 women, 8 men, mean age 59.4±14.3) were included. The 27 patients underwent 88 scans (44 scans on each scanner). Scans were randomly and independently evaluated. Three pairs of sympathetic ganglia were qualitatively evaluated (stellate, celiac and sacral) for each scan (total: 264 sites). SUVmax was measured for any visualized ganglion. Background was measured on ascending aorta blood pool (BP) and the ganglia SUVmax ratio to BP was considered as the target-to-background ratio (TBR).

RESULTS: The overall visualization of ganglia was significantly more frequent on EXPLORER compared to GE690. EXPLORER detected 109 ganglia out of 264 sites (41%) compared to 53 (20%) for GE690 (OR: 4.1, 95%CI: 2.4-7.3; P < 0.0001). The difference was still highly significant on site-basis for stellate (n= 72 vs. 38) and celiac (n = 24 vs. 2) but not for sacral ganglia (13 ganglia for each). TBR was significantly higher on EXPLORER compared to GE690 (2.1±1.2 vs. 1.7±1.0; P=0.002).

DISCUSSION: The described sympathetic ganglia are anatomically close to structures that could be involved by various neuroendocrine tumors (e.g., lymph nodes, paragangliomas...etc.). Though physiologic, tracer uptake in these ganglia could be intense on EXPLORER and should not be mistaken for a pathology unless supported by other findings.

CONCLUSION: Sympathetic ganglia are more frequently and conspicuously seen on 68Ga-dotatate EXPLORER scans compared to a conventional scanner. This uptake should not be mistaken for anomaly.

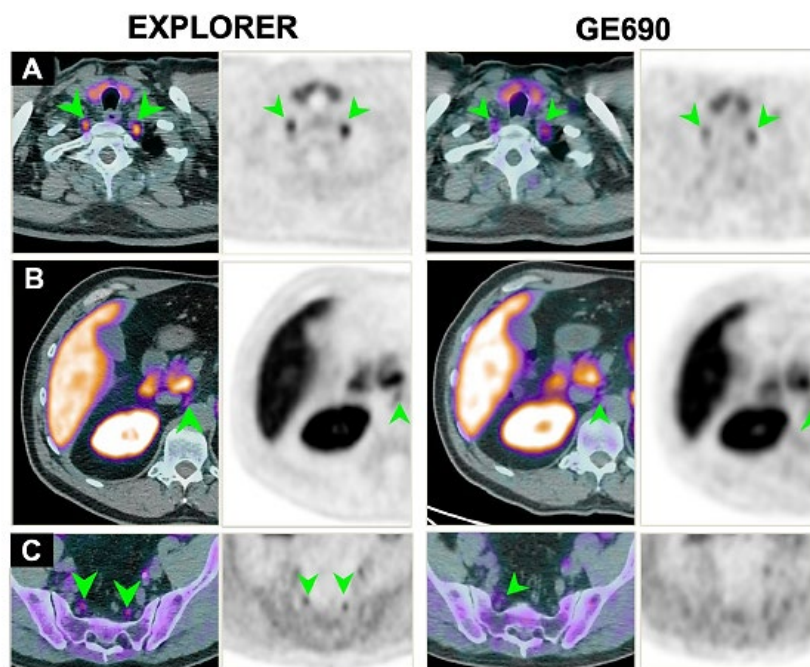


Figure 1. A 59-year-old man with metastatic small bowel neuroendocrine tumor. EXPLORER and GE690 PET/CT images revealed clear visualization of stellate ganglia bilateral (A), while the right celiac ganglia is well-visualized on EXPLORER (B) compared to very faint uptake on conventional scanner (B). The presacral ganglia at S1 are almost only visualized on EXPLORER (C).