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## RADIOLOGY AND ONCOLOGY

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**Role of <sup>68</sup>Ga-DOTA-NOC PET/CT in detection of unknown primary neuroendocrine tumors (CUP-NET)****Charu Jora**

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**Aim:** This study aimed to determine the role of <sup>68</sup>Ga-DOTA-NOC PET/CT in the detection of undiagnosed primary sites of neuro endocrine tumors (NETs) and to understand the tumor biology of the primarily undiagnosed tumors.

**Method:** Overall 47 patients (29 men and 18 women, age: 50±9 years) with documented NET metastases and unknown primary were enrolled. PET/CT was performed after injection of approximately 100 MBq (46-260 MBq) of <sup>68</sup>Ga-DOTA-NOC. Any area with intensity greater than background was considered to be indicative of tumor tissue and the maximum standardized uptake values (SUVmax) were calculated. CECT was done in all the patients prior to PET/CT study and the results were compared.

**Result:** In 37 of 47 patients (78%), <sup>68</sup>Ga-DOTA-NOC PET/CT localized the site of the primary: Stomach, duodenum, jejunum, ileum, pancreas (head, neck, uncinate process, body and tail), rectum, lungs, kidney, gall bladder and prostate. Size of primary tumor was less than 2 cm in 17 of 37 detected cases. Focal <sup>68</sup>Ga-DOTA-NOC uptake at the site of primary without underlying CT abnormality was seen in 3 cases. Rare sites of primary NET in gall bladder, horseshoe kidney and prostate were identified. Besides the usual metastases to lymph nodes, liver and bone, atypical metastases to lung, pancreas, adrenal gland, spleen, orbit, brain and bone marrow were detected in some cases. Osteolytic bone metastases were detected in few cases. Portal vein thrombus and splenic vein thrombus were additional findings in three cases. CT alone (on retrospective analyses) confirmed the findings in only 12 of 47 patients (25%). 6/47 patients with loco regional disease on PET/CT underwent surgical resection of disease. 21/47 with DOTA-NOC avid disease were started on octreotide therapy and PRRT. 11/47 with mild DOTA-NOC uptake were managed with systemic chemotherapy.

**Conclusion:** Our study shows that <sup>68</sup>Ga -DOTA-NOC PET/ CT detects both usual and unusual sites of primary tumor and metastases. Tumor size is an unreliable predictor of metastatic potential, as metastases is seen in primary tumors less than 1 cm in diameter. Early detection of rare atypical sites of primary NET like kidney and gall bladder helps in individualizing treatment approach. DOTA-NOC avidity and disease extent helps in systematic management of patients as seen in this study. Our data clearly indicate that <sup>68</sup>Ga -DOTA-NOC PET/CT is a promising imaging modality for evaluation of patients with CUP-NET.

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