



Incremental value of ⁶⁸Ga-Trivehexin PET/CT over ¹⁸F-FDG PET/CT in patients of Head and Neck Squamous Cell Carcinoma and Pancreatic Ductal Adenocarcinoma

- Initial Experience in single tertiary care oncology center in India.

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Aim: To assess the incremental value of ⁶⁸Ga-Trivehexin (trimerized αvβ6-integrin selective nanopetide) PET/CT over ¹⁸F-FDG PET/CT in patients of head and neck squamous cell carcinoma (HNSqCC) and pancreatic ductal adenocarcinoma (PDAC).

Study design	Investigator initiated comparative study
No. of patients	17 patients with PDAC or HNSqCC
Investigations	⁶⁸ Ga-Trivehexin ¹⁸ F-FDG (on separate day) Followed by tissue biopsy
Image analysis	Visual and semi-quantitative analysis by two Nuclear Medicine Physicians blinded to the results of the biopsy.
Primary Outcome	To compare the mean SUVmax of the tumor lesions in both the modalities
Secondary Outcome	To assess the difference in tumor-to-non-tumor (T/N) activity in both the image modalities

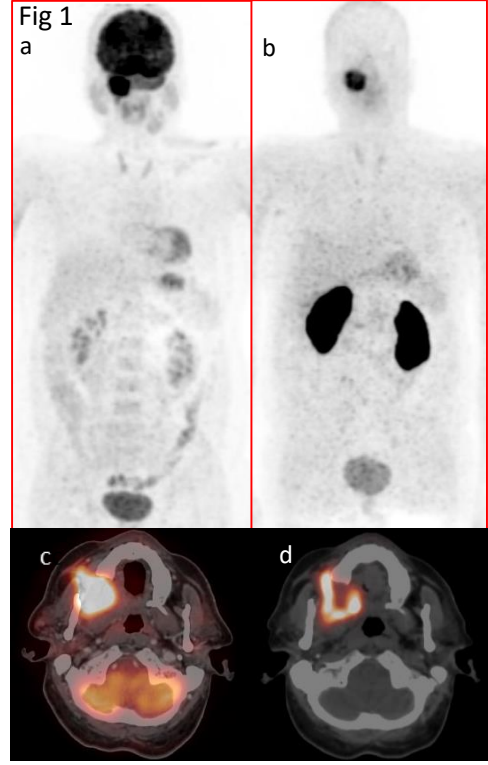


Fig 1: SqCC right upper alveolus, whole body MIP-¹⁸F-FDG (a) and ⁶⁸Ga-Trivehexin (b), fused PET/CT images ¹⁸F-FDG (c) and ⁶⁸Ga-Trivehexin (d).

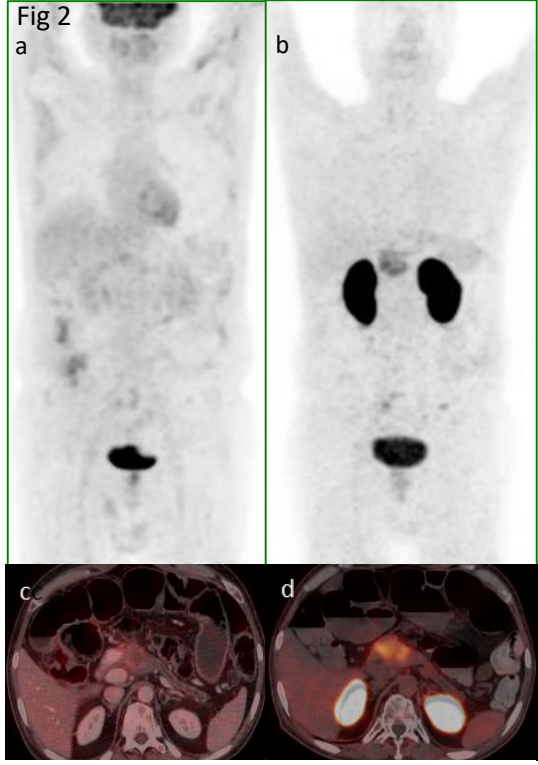


Fig 2: PDAC, whole body MIP-¹⁸F-FDG (a) and ⁶⁸Ga-Trivehexin (b), fused PET/CT images ¹⁸F-FDG (c) and ⁶⁸Ga-Trivehexin (d).

Results:

- 15 of the 17 patients showed both ⁶⁸Ga-Trivehexin and ¹⁸F-FDG uptake in the tumors.
- 2 patients showed focal ¹⁸F-FDG uptake with no abnormal ⁶⁸Ga-Trivehexin uptake.
- Biopsy from the lesion showed only inflammatory cells in both these patients suggesting the superiority of ⁶⁸Ga-Trivehexin over ¹⁸F-FDG.
- Visually, ⁶⁸Ga-Trivehexin PET/CT showed a favorable tumor-to-background contrast compared to ¹⁸F-FDG PET/CT with sharper images and practically no uptake in the surrounding normal tissue.

Scans	SUVmax ± SD		Tumor/Background ratio	
	⁶⁸ Ga-Trivehexin	¹⁸ F-FDG	⁶⁸ Ga-Trivehexin	¹⁸ F-FDG
HNSqCC	22.9 ± 10.7	18.2 ± 10.6	3.3	2.6
PDAC	10.2 ± 4.5	8.6 ± 3.7	3.7	2.7

Conclusion:

- ⁶⁸Ga-Trivehexin is a promising non-invasive molecular imaging agent for tumors expressing αvβ6 integrins.
- Holds the potential to replace ¹⁸F-FDG as the standard-of-care radiotracer, in cases where ¹⁸F-FDG PET/CT is suboptimal due to its low uptake owing to low GLUT receptors or due to its nonspecific uptake.
- Can serve as a surrogate investigation to invasive tissue IHC for β6 integrin expression
- Can emerge as a potent **theranostic agent** in the field of Nuclear Medicine

*Study site: Department of Nuclear Medicine, Fortis Memorial Research Institute, Gurgaon, INDIA