

^{99m}Tc-TRODAT-1 SPECT/CT molecular neuroimaging for dopamine metabolism: First clinical experience in Bandung

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ABSTRACT

Introduction: ^{99m}Tc-TRODAT-1, a SPECT radiotracer that binds to the dopamine transporter (DaT), is a nuclear medicine imaging technique to provide objective data for establishing diagnosis and monitoring disease progression for Parkinson's Disease (PD) and other Parkinsonian syndromes such as multiple system atrophy (MSA) and progressive supranuclear palsy (PSP). We report our first clinical experience using ^{99m}Tc-TRODAT-1. **Materials and Methods:** ^{99m}Tc-TRODAT-1 brain SPECT/CT scans were performed on four subjects: two patients with motor disorders (A, B) and two healthy volunteers (C, D). Patients were asked to stop the anti-Parkinson drug for 12 hours before the brain scan. A brain SPECT/CT scan (NM/CT 860, GE) was performed 4 hours after injection of 21 ± 2 mCi ^{99m}Tc-TRODAT-1 intravenously. Acquisition time per projection was 30 seconds, and attenuation corrections were performed using the Chang method. The images were reconstructed using the DATQuant program for visual analysis and grading. Radiopharmaceutical uptake in the basal ganglia was compared with the background (occipital region). Decreased uptake in the basal ganglia area was considered positive for Parkinson's disease. **Results:** Patient A (Female, age 68, normal MMSE), previously diagnosed with dementia and suspected of parkinsonism, showed markedly decreased uptake at bilateral putamen and caudate nucleus, consistent with grade IV PD. Patient B (Male, age 75), previously diagnosed with PD and presented with tremour and rigidity, showed slightly decreased uptake consistent with grade II PD. Patient C (Male, age 28) and D (Male, age 30) were cognitively-healthy and showed normal ^{99m}Tc-TRODAT-1 uptake in the basal ganglia area. **Conclusion:** Adjusting to the unique challenges presented in Indonesia for nuclear imaging services, we believe the ^{99m}Tc-TRODAT-1 brain SPECT/CT scan can serve as a good initial stepping stone to eventually offer full-fledged molecular neuroimaging services in the country.