2013 Ictal Brain SPECT for Localizing Epileptogenic Zone of Neocortical Epilepsy

Hyun IY, Lee MC, Kim ES, Lee KH, Lee DS, Chung J-K, Koh C-S. (Department of Nucl. Med., Seoul National Univ. Hosp.)

Ictal brain SPECT & MRI were done in 20 patients with clinically suspected neocortical epilepsy. Ictal SPECT showed regional hyperperfusion in 17(85%) patients and MRI showed pathologic findings in 7(35%) patients. So ictal brain SPECT is more sensitive in localization of epileptogenic zone of neocortical epilepsy than MRI and useful guide to invasive EEG.

2014 Three dimensional imaging of cortical structure, function and glioma with PET and MRI.

Nariai T, Senda M, Ishii K, Ishiwata K, Oda K, Endo S, Toyama H, Wakabayashi S, Hirakawa K (Dept. Neurosurg. TMDU & TMIG PET , Tokyo, Japan)

An imaging protocol to visualize the spatial relationship between glioma and eloquent cerebral cortex, using 3D visualization of PET and MRI, was developed. The validity of this technique was confirmed with reference to intraoperative cortical mapping and pre and post operative neurological symptoms. The language and motor cortices were mapped with PET $H_2{}^{15}O$ activation technique. Active glioma was mapped with PET ^{11}C-methionine study. They were depicted on 3D brain surface image of MRI. Successful glioma resection was accomplished without damaging cortical function in most cases.

2015 A new opioid receptor imagent agent

Wang R F & Ma S Y (Fujian Medical Coll. Nucl. Med.)

One of the goals of our current resaech has been to develop an ^{125}I- or ^{123}I-labelled radioprobe suitable for imaging opioid recptors with SPECT. [^{125}I]7α-O-iodoallyl diprenorphine ([^{125}I]-7α-O-IA-DPN) was prepared in three steps by radioiododestannylation (90% of yield) and characterized. As an opioid antagonist *in vitro* and *in vivo* binding studies showed very high affinity (K_i=0.4±0.2 nM) and 63% of specific binding for this agent. Blocking studies perfomred with a series of receptor specific ligands have demonstrated that the uptake of activity is non selective. *Ex vivo* autoradiography further confirmed the high uptake and retention of this radiotracer in regions rich in opioid receptors. The results suggest that [^{125}I]7α-O-IA-DPN is an attrctive new agent for potential imaging of opioid receptors using SPECT.

2016 INTRA- AND INTEROBSERVER RELIABILITY AND SEMI-QUANTITATIVE ANALYSIS OF OPERATOR-DEFINED BRAIN REGIONS OF PERFUSION-SPECT OBTAINED WITH HIGH SPATIAL RESOLUTION IN HEALTHY VOLUNTEERS.

C. Van de Wiele, P.P. De Deyn, A.Dobbeleir, A. Vervaet, J. Vandevivere, R.A. Dierckx.

The aim of this study was to perform an operator-defined regional analysis on high spatial resolution brain Tc-99m HMPAO SPECT slices obtained in healthy volunteers.
First, although right-to-left differences are small using operator-defined regional analysis, interobserver and certainly anterior-posterior data suggest the need for a more reliable and stable regional analysis method for long term comparison. Secondly, especially operator-defined cerebellar image ROIs were found to be highly symmetrical and reproducible.

2017 Mismatch of Tracer Distribution Between Tc-99m HMPAO and I-123 IMP brain SPECT in Subacute and Chronic Stroke.

Lee KH*, Hayashida K, Ishida Y, Hirose Y. (Seoul National University Hospital*, National Cardiovascular Center).

23 stroke patients underwent HMPAO and IMP brain SPECT with a mean 16 day's interval. 5 of 7 patients in subacute stage (2 - 42 days) and 3 of 16 in chronic stage (>42 days) had a mismatch. Distribution of tracer uptake was semiquantitatively assessed by an asymmetry index (AI) (as the count ratio of the involved area to the normal area). AI of HMPAO was significantly higher than that of IMP in the subacute group (1.01±0.04 vs. 0.87±0.05, $p<0.05$), as well as in the chronic group (0.90±0.01 vs. 0.86±0.01, $p<0.01$). AI of HMPAO was higher in the subacute group compared with that in the chronic group ($p<0.001$), probably due to the effect of hyperfixation of PAO in the subacute phase.

2018 Quantitative Measurements with Different Filters

Leo G. Flores II, Hiroaki Hoshi, Seishi Jinnouchi, Shigeki Nagamachi, Takashi Ohnishi, Shigemi Futami and Katsushi Watanabe (Radiology, Miyazaki Medical College)

OBJECTIVE: To be able to present graphically the difference in count with different filters.
METHOD: Various concentration of Technetium-99m placed in a 6 semi triangles of an oval shape phantom. Three headed gamma camera (PRISM 3000) with low energy ultrahigh resolution fan beam collimator was used for SPECT imaging. Transverse images were reconstructed with 128 x 128 matrix and 6.25 mm slice thickness. Prefiltering with Ramp filter, Ramp filter with best filter and without best filter and Low pass 3D Postfilter with cut off 0.199 was done. Metz filter and Wiener filter were also used. Attenuation with First Order of Chang attenuation correction. Data processing was done with use of ODYSSEY super computer. 30 pixel size region of interest (ROI) was drawn 3 mm and 6 mm from the center of the phantom and count was estimated.
SUMMARY OF RESULTS: The counts in Low-Pass with best filter showed higher values while the other remaining filters did not show much difference in their values.

Presented by Medical*Online