

NeuroQ™3.0

Increasing Accuracy and Adding Confidence in the Differential Diagnosis of Dementia

NeuroQ 3.0 is a tool that helps with the differential diagnosis of dementia and allows a physician to monitor the progression of a patient's disease. This user-friendly clinical tool is a nuclear medicine software platform that provides quantitative analysis and image display of brain PET scans. Unlike other brain imaging programs, it can automatically identify and quantify differences between two FDG-PET studies of the same patient. Other programs can only compare a patient's scan to a limited database of normal brain scans. NeuroQ 3.0 can reslice brain images from current and previous patient scans to create a more exact image and a region-by-region of comparison of areas throughout the brain. This added functionality provides a more accurate way to evaluate the brain, diagnose and differentiate the type of dementia earlier, and monitor its progression.

NeuroQ 3.0 is an FDA cleared upgraded version of the original 2.0 software platform marketed by Syntermed, Inc. since 2004. Daniel Silverman, M.D., Ph.D., head of Neuro Nuclear Imaging at UCLA Medical Center, and Syntermed developed both the original and upgraded versions of NeuroQ. The company released the new version on June 14, 2008 at the Society for Nuclear Medicine (SNM) annual meeting in New Orleans.

NeuroQ 3.0 includes EQuAL™

EQuAL is a unique neuro imaging analysis tool for brain PET imaging of temporal lobe epilepsy (TLE). As documented in peer-reviewed medical literature (J Nucl Med, 2007; 48:776-782), EQuAL analysis of PET scans provides a non-invasive way to more accurately determine in advance of TLE surgery, the likelihood that a patient will become seizure-free after surgery. EQuAL is included in the NeuroQ 3.0 platform.

NeuroQ 3.0 – Applying a quantified objective method to analyze brain PET images

- Provides rapid automated quantification of relative activity in more than 240 specific regions of interest of the brain (sROI):
 - compares activity of brain regions in an individual scan to those of the largest data base of normal scans
 - detects clinically meaningful abnormalities of regional brain metabolism
 - quantifies the magnitude of abnormality and statistical significance
 - generates a comprehensive color-coded image presentation
- The Comparison and EQuAL functions are unique from other programs. They can automatically identify and quantify the differences between two FDG-PET brain studies of the same patient, as well as between normally symmetric regions of interest within the brain PET study. There are advanced technical benefits. Unlike other programs, normalization, the quantitative comparison of areas of interest to those unaffected by disease, is available for multiple stable regions of the brain – not just the whole brain. NeuroQ can extensively analyze the regional abnormalities that are characteristic of the many types of dementia.
- It is an adjunctive tool that can efficiently improve brain scan readings by adding automated quantification analysis to the visual reading of the brain scans.

NeuroQ™ 3.0 – an adjunctive tool for quantification of brain PET scans

- Each type of dementia has a characteristic metabolic pattern. NeuroQ can rapidly quantify the level of brain metabolism region by region, providing the physician with valuable information that can be used to make an earlier and more accurate diagnosis.

In a study of Nuclear Medicine residents with 1-3 years experience in reading brain PET scans, the addition of NeuroQ improved the accuracy of their read and by 13% – 18% as compared against a gold standard of long-term clinical outcome data.

- An accurate differential diagnosis has significant clinical implications for treatment, including selection of the most appropriate drugs for maximizing benefits while minimizing potential adverse effects
- Includes a quality control feature for scalp correction, setting limits for reformatting, and an enhanced image registration algorithm.
- Can fuse images of PET and CT data, displaying 0% to 100% contribution from each modality, simply by sliding a lever at the top of the display screen.
- Compatible with any nuclear medicine workstation or personal computer system or PC/Mac that supports Windows operating system.

Independent Clinical Beta test Users

The following physicians can comment on their experience with the NeuroQ program.

Edward Coleman, M.D., professor, director of Duke University School of Medicine, nuclear medicine

Kevin L. Berger, M.D., assistant professor radiology, director PET imaging, Michigan State University

Wei Chen, M.D., nuclear medicine, Kaiser Permanente Woodland Hills Medical Center, Los Angeles

Michael Kipper, M.D., nuclear medicine, University of California San Diego, CA

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