NEURO PACKAGE

ImagingBiometrics
CREATING THE STANDARD

In March of 2018, IB was acquired by IQ-AI Limited (London, UK) and is pursuing development efforts in the exciting world of artificial intelligence and deep learning networks. Solving complex problems with powerful, elegant, best-in-class solutions is what we do. When our clients come to us in search of help with difficult problems, they know that they can count on us to provide new insights and meaningful improvements, always with patient care as our highest priority.

Following is description of each module offered by IB Neuro.

IB NEURO™

Dynamic susceptibility contrast (DSC) MRI methods allow the creation of relative cerebral blood volume (rCBV) maps that have the potential to provide more specific information about brain tumor biology and vasculature than compared to standard anatomical MR images. It has been shown that MRI-derived rCBV may: 1) better differentiate histologic brain tumor types than conventional MRI; 2) provide information to predict glial tumor grade; and 3) may even predict survival better than conventional histopathological tumor grading. In addition, rCBV maps may aid in differentiating post-treatment radiation effects from tumor and predict local recurrence or malignant transformation earlier than conventional anatomical MR imaging.

IB Neuro: Perfusion Base Pack

- Platform-independent library allows for seamless integration into existing server and workstation applications.
- Instantaneously computes and displays a complete set of perfusion maps from dynamic susceptibility contrast MR imaging data using push-button processing including; rCBV, CBF, MTT, TTP, and Tmax
- Automatically corrects for artefacts in rCBV maps caused by contrast agent leakage across disruptions in the blood brain barrier
- Displays the dynamic MR signal time course for any chosen brain location
- Automatically exports perfusion parameter maps to the same medical imaging examination in DICOM compatible format
- Automatically generates a report with summary statistics
- Integrates with multiple PACS to assess data and distribute results
- Normalizes perfusion parameters to Normal Appearing White Matter (NAWM) to facilitate comparisons across serial imaging studies in the same patient, and comparisons between patients
- Automated selection of arterial input functions (AIFs) for CBF
- CT Perfusion post-processing
- Longitudinal reporting capability
- Ability to output maps fused to anatomical with registration

IB DCE™

IB DCE software analyzes conventional T1 weighted images and generates an array of relevant perfusion and permeability parameters. Employing the extended Tofts, Tofts and Patlak models, contrast agent permeability analysis is now intuitive and designed with the same user interface as other IB software products.

IB DCE: DYNAMIC CONTRAST ENHANCED STUDIES

- Fast generation of perfusion parameter maps (Ktrans, Ve, Vp, T10, Initial Slope, Time to Peak (TTP), Peak Enhancement, initial area under curve (IAUC)
- Accurate implementation of the Extended Tofts, Tofts, and Patlak pharmacokinetic models
- Automatic generation of Vascular Input Function (VIF)
- Automatic selection of flip-angle series to process
- Allows manual override of flip-angle series selection
- Ability to normalize parameters to normal-appearing tissue
- Ability to output maps fused to anatomical with image registration
- All calculations are done with the push of simple and intuitive buttons
- New calculated images are automatically exported as new DICOM series and can be easily pushed to a PACS
- Automatic report generation in form of a DICOM series that can be exported

IB DELTA SUITE™

IB Delta Suite software consists of "bread and butter" radiological tools that make image manipulation easier and consistent.

For example, IB Delta Suite can take conventional MR images (pre- and post-contrast T1-weighted images) and generate quantitative Delta T1 Maps (qDT1 maps). qDT1 maps are sensitive to subtle contrast enhancement on post-contrast T1 images and selectively ignore blood products which enhance on pre-contrast T1 images. Thus, qDT1 maps aid in automatic detection of tumor regions, free of blood products, which is becoming increasingly useful in longitudinal analysis of patients treated with anti-angiogenic agents. In addition to separating blood products from tumor, qDT1 maps enable easy, convenient visualization of post-surgical residual tumor.

IB DELTA SUITE: Post Op Residual Tumour & Reccurance

- Multiple registration algorithms to register inter- and intra- study MR scans (rCBV, DT1, ADC, FTB)
- Exclusive standardization algorithm that allows consistent comparison between different studies
- Delta T1 Map generation which gives quick and easy detection of tumor regions
- Thresholding capabilities that allow automatic generation of tumor regions of interest
- All calculations are done with the push of simple and intuitive buttons
- New calculated images are automatically exported as new DICOM series and can be easily pushed to a PACS
- Automatic report generation in form of a DICOM series that can be exported

IB DIFFUSION™

Diffusion-weighted imaging (DWI) is a powerful MRI method which probes abnormalities of tissue structure by detecting microscopic changes in water mobility at a cellular level beyond what is available with other imaging methods. Accordingly, DWI has the potential to identify pathology before gross anatomic changes are evident on standard anatomical brain images. These features of tissue characterization and earlier detection are what make DWI particularly appealing for the evaluation of gliomas and the newer therapies where standard anatomical imaging is proving insufficient.

IB Diffusion™ analyzes MR diffusion-weighted images (DWI) and generates Apparent Diffusion Coefficient (ADC) maps, extrapolated b-value, intravoxel inherent motion (IVIM), and other diffusion parameters.

IB DIFFUSION SUITE: WHOLE BODY DIFFUSION SUITE (BREAST PROSTATE & MUCH MORE)

- b values can be read directly from DICOM image headers
- The standard two-point ADC calculation (ADC = $\ln(S_0/S_1)/(b_1-b_0)$) is implemented
- Linear regression is used to calculate ADC maps with more than two volumes, each with a unique b value
- ADC values can be normalized using the mean value from a region of interest (ROI)
- All calculations are done with the push of simple and intuitive buttons with manual override capability
- New calculated images are automatically exported as new DICOM series and can be easily pushed to a PACS
- Automatic report generation in form of a DICOM series that can be exported

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IB RAD TECH™

IB Rad Tech™ is a workflow "engine" that processes customized workflows. Once the workflow is defined, IB Rad Tech makes the generation of our exclusive and sophisticated image maps, such as quantitative delta T1 and FTB (fractional tumor burden), easy and fast. Now, this rich information is no longer limited to just large research hospitals. Smaller healthcare providers, such as community hospitals and imaging centers, can now benefit from this advanced visualization in an affordable and efficient manner.

Too often, instead of spending time with patients, busy doctors are trying to keep abreast of ever-changing technology advancements. Advanced visualization work-ups, on a case-by-case basis, can be prohibitive if additional resources are not available.

IB Rad Tech simplifies the post-processing of advanced imagery by acting as a "workflow wizard". Automation and customization are balanced with key quality inputs and built-in intelligence. Developed in collaboration with leading radiologists, IB Rad Tech minimizes nagging mouse-clicks and has reduced the time involved to generate FTB maps by over 75%.