ciber-bbn

SOFTWARE

A toolbox for SPECT quantification in dopaminergic system (tQUDOSY)

Market sector: Software, diagnosis, neurodegenerative diseases

Type of opportunity: licensing and/ or co-development

Scope of the problem

Single photon emission computed tomography (SPECT) using [123I]FP-CIT is a well-established diagnostic tool for in vivo evaluation of the nigrostriatal dopaminergic system in Parkinson's disease (PD). SPECT images of patients suffering from PD show lower uptake in the striatum caused by the depletion of the dopamine transporter (DAT). Although diagnosis by experienced observers is mainly based on qualitative criteria, the quantification of striatal DAT binding is highly recommended to improve diagnostic accuracy. The European Association of Nuclear Medicine Neuroimaging Committee (ENC) provides guidelines for brain neurotransmission SPECT using 123I-labeled radiopharmaceuticals that include recommendations on reconstruction methods, filtering, applied data corrections and regions of interest (ROIs).
According to these guidelines, each center chooses its own image processing conditions. As a result, the quantitative values obtained from the [123I]FP-CIT SPECT images are dependent on the scanner, acquisition protocol, reconstruction parameters and ROIs. Thus, quantitative results need to be standardized before comparison with a database of normal control scans or in the case of multicenter clinical trials.

Patient need addressed: Parkinson's disease, Alzheimer's disease, Lewy body disease

Our innovation:

- tQUDOSY is a set of routines necessary to implement an application that allows the quantification of SPECT studies of the dopaminergic system with the purpose of helping in its visual evaluation.
- Facilitates the differential diagnosis of movement disorders (Parkinson's disease versus other entities)
- and cognitive impairments (Alzheimer's disease versus Lewy body disease)
- It can also be used in the early detection of Parkinson's disease and Lewy body disease
- It could also be applied in the quantification of studies with other tracers of the nigrostriatal system (IBZM, β-CIT) or with PET studies (Positron Emission Tomography) with FDOPA
- The programming language used for the development of the application is C ++
- Currently the routines are available to be compiled in Windows and Linux environment

Competitive advantages: The applications generated with the tQUDOSY routines do not require specialized technical personnel to be used. It can be compiled in any operating environment. It allows to obtain comparable standardized values between different centers and teams that use the same software, previously validated in a clinical environment.

Market size/ opportunity: The market for neurodegenerative disease will experience robust growth, Parkinsons disease treatment market is expected to reach USD 5.69 Billion by 2022 from USD 4.24 Billion in 2017, at a CAGR of 6.1% (Markets and Markets 2018). The global Alzheimer's Disease market, worth $2.9 billion in 2016, is predicted to reach $14.8 billion by 2026 across US, Japan, France, Germany, Italy, Spain, and the UK (the seven major markets) (GlobalData 2018).
In 2022, the global health care equipment & supplies market is forecast to have a value of €435.7 billion (18.6% for Other equipment segment). Geographical segmentation: USA 38.3%, Europe 31.7%, Asia-Pacific 24.2%, Middle East 0.8%, Rest of the World 5.1% (Marketline 2017).

Intellectual property

Intellectual Property was recorded by notary in Madrid, Santiago Cháfer Rudilla, No. 1.220 (03/07/2019)

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