

Significance of Neuroimaging for Movement Disorders: An Analytical Perspective

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DESCRIPTION

One of the neurological diseases which are seen very common in humans is Movement Disorder (MD). Movement disorder is a cluster of pattern exemplified by a mutilation of the directive of deliberate activity of motor cortex with no functionality of cerebella. Disorders such as Parkinson's disease, tic disorders etc comes under this cluster pattern. In general terms, the medical symptoms of movement disorders are due to the damage of basal ganglia cells. Many previous studies depicted the loss of changes in some of functionality of neurons; however, the pathologic sources for several disorders like MD still undetermined. In order to visualize such pathologic occurrences in many movement disorders, an advanced technique name neuroimaging has been used. Various neuroimaging techniques such as MR (Magnetic Resonance) imaging etc. have been used to visualize pathological changes in these disorders. In this article, significance of neuroimaging techniques is depicted for resolving conflicts of movement disorders. Further, some limitations are also explained.

Eckert and Eidelberg have discussed an analytical perception on the significance of neuroimaging for treating movement disorders [1] in the year 2005. The authors have particularly focused on Parkinson's disease and described the neuroimaging approaches to assess and scrutinize the therapeutic involvements for MDs. They have observed the alternate approaches for treating Parkinson's disease using new imaging techniques. Ling and Lee [2] have reviewed the significance of neuroimaging in diagnosing the movement disorders in the year 2010. The authors have utilized MR Imaging techniques in eight cases of different aged people for the assistance of movement disorders. They have stated that MR approaches will be recognized to use for a greater extent in clinical practices for movement disorders. Roelofs et al., [3] have reviewed the usage levels of neuroimaging approaches for FMD (Functional Movement Disorders) in the year 2019. The authors have stated in their paper that functional imaging gives correlates however these are susceptible to confounding aspects. They have also describe that functional

imaging will be acted an important role in biomedical and healthcare. Kassubek [4] has reviewed MRI Imaging significance on movement disorders. The author has stated that DWI (Diffusion Weighted Imaging), QMRI (Quantitative based MRI) etc. are frequently used imaging techniques for movement disorders. Also, the author has stated that ML (Machine Learning) based techniques have also been used such as support vector machine etc. for movement disorders. The author concluded in his paper that many MRI based imaging techniques are yet to be explored for movement disorders. Draganski and Bhatia [5] have reviewed new advancements in neuroimaging based approaches for movement disorders and brain structures. The authors have stated that DWI approaches, quantitative relaxometry as well as surface based approaches are frequently used for movement disorders. They have concluded that MRI based approaches offered immense solutions for movement disorders and hence it redefines the neuroanatomical value.

From the literature, it is observed that various advancements focused on movement disorders with the help of neuroimaging approaches. However, there is a need to explore more other imaging techniques for diagnosing movement disorders. Also, it is important to explore on which imaging technique is efficient to resolve which particular disease. Moreover, it also needs to focus on the effectiveness of the focused technique.

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