Search for A Midbrain Anteroposterior Diameter Threshold to Study Brain Atrophy in Spinocerebellar Ataxia Type 2

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Extended Abstract

Neuroimaging techniques in relation to the study of the anatomical involution of the brain stem and cerebellum have gone through different stages in direct relation to technological advances [1]. The study of hereditary ataxias type 2 (SCA2) has advanced in terms of genetic, molecular and pathogenic knowledge; however, nowadays, Nuclear Magnetic Resonance (MRI) has a fundamental role in the imaging diagnosis of brain atrophy in patients with ataxia [2]. The study describes a morphological analysis of SCA2 patients using 2D measurements in their magnetic resonance imaging (MRI) studies over predetermined regions of the cerebellum, brainstem and cervical medulla [3].

The proposal is to determine a threshold in the measurements of the anteroposterior diameter of the midbrain to contribute to an imaging marker. This contributes to the diagnosis and progression of brain atrophy in patients with SCA2 [4]. Normality tests such as Kolmogorov-Smirnov, Shapiro-Wilks and Anderson-Darling were applied [5], variances and means were compared, and confidence intervals were calculated to propose the threshold.

As a result, it is proposed that threshold values of the before posterior midbrain diameter less than 19.12083 mm, allow quantitative MRI diagnosis of midbrain atrophy in relation to SCA2 patients. It is also suggested to compare this result with the one that can be obtained using the supervised learning method known as ROC curve [6] that allows classifying and separating the data between healthy and SCA2 patients, in this way a threshold can be obtained and compared with the proposed one.

References

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