

MR diffusion tensor imaging applied to the spinal cord of patients with neuropathic pain secondary to herpes zoster infection

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Introduction

The purpose of this study is to compare the clinical findings to the quantitative values obtained by the diffusion tensor images (dti) studies and to study the spinal cord of the patients with post herpetic neuralgia using the fractional anisotropy (FA), apparent diffusion coefficient (ADC) and correlate these data with the clinical findings. To compare the results of the dti study of the patients that developed post herpetic neuralgia with the results of the patients that presented herpes zoster but didn't present secondary neuralgia.

Methods

Thirty MRI exams (cervical and dorsal spine) were realized in fifteen patients: two male and thirteen female, ten patients with PHN and five patients that had HZ without chronic pain. The exams were done at a 1.5T Siemens MR, diffusion and T2 sequences were analyzed at a Leonardo WS. The parameters analyzed and compared were FA and ADC and statistical analysis were performed to compare the data of the individuals with pain and patients without pain and the data obtained at the cervical and dorsal region.

Results

The average FA were: (cervical - total: 406,15 ; PHN : 459,35 ; HZ: 415,42 ; female : 407,83 : male : 398,22) (dorsal - total : 355,71; PHN 358,62 ; HZ : 360,25 ; female: 348,64 ; male: 405,86). The average ADC were : (cervical - total: 2184,31 ; PHN : 2198,88 ; HZ : 2163,59 ; female : 2168,26 : male : 2274,08) (dorsal - total : 2699,86; PHN 2663,03 ; HZ : 2676,67 ; female: 2713,06 ; male: 2629,65).

Scheme:weka.classifiers.trees.J48
D8 <= 390.62: YES (9.0)
D8 > 390.62
| D8 <= 2438.88: NO (12.0/2.0)
| D8 > 2438.88: YES (9.0)
Number of Leaves : 3
Size of the tree : 5
Correctly Classified Instances
21 70 %
Incorrectly Classified Instances
9 30 %
Kappa statistic
0.3415,Mean absolute error
0.3061,Root mean squared error
0.5093,Relative absolute error
68.2751 %,Root relative squared error
107.9991 ,Total Number of Instances
30

Conclusions

As there is initial evidence in this study confirming the relevance of the dti parameters in PHN, the idea of being dti changes related to abnormal distribution of the white matter in the spine still needs to be proved.

Learning Objectives

Clarify the indications of the dti studies to analyze the spinal cord of patients with post herpetic neuralgia.

References

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