Title: Analysis of quantitative ADC MR imaging as predictor of reponse of recurrent glioblastoma to anti treatement.

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Abstract

Introduction: Neuroncologic decisions at each stage of high grade gliomas are based on both, clinical criteria and the results obtained with imaging tests such as Magnetic Resonance Imaging (MRI).One of the consequences of anti-vascular action of antiangiogenic drugs is the stabilization of the blood-brain barrier and a reduction in the contrast enhancement of the tumors, which is one of the most commonly used radiological signs when assessing the tumor response. This limitation can be overcome through advanced imaging techniques such as the apparent diffusion maps (ADC). Recent Studies suggest that ADC can predict the therapeutic response to antiangiogenic drugs.In this paper the potential of ADC maps is evaluated as predictor for antiangiogenic tumor response. **Methods:** A retrospective study of ADC maps obtained from patients suffering anaplasic astrocitomas or glioblastomas progression after surgery and radiation therapy were analyzed. The histograms of the regions defined by the contrast enhancing areas on T1 weighted images and infiltrated regions on T2 weighted FLAIR images were computed, analyzed and tested against the surviving time since the antiangiogenic treatment start. **Results:** ADC maps of 61 patients were reviewed and 22 were discarded due to technical or clinical reasons. ADC maps from 39 patients were quantified obtaining the statistical information shown on tables 1 and 2.Any correlation coefficient between any statistical information obtained from ADC maps and surviving time was better than 0,3 as shown in table 3. **Conclusions:** Despite the small sample size quantified, these results suggest that ADC maps analysis may not be used alone as predictor for response to antiangiogenic drugs.

Tables:

Table 1.- T1_L and T1_H are the mean value of the 2 gaussian mixture which fitted the histogram of ADC values of the ROI depictedon T1 contrast enhanthing regions, T2_L and T2_H are the same for ROI depicted on T2 FLAIR showing infiltrating regions.

	T1_L	T1_H	T2_L	T2_H
Mean (μm2/s)	1123	1567	1088	1454
σ (%)	20	18	18	16

Table 2.- T1&T2_L, T1&T2_H1, T2&T2_H2 are the mean of the thee gaussian mixture function which fitted the histograms of the joint ROI for T1 contrast enhancing region and infiltrated region depicted on T2 Flair .

	T1&T2_L	T1&T2_H	T1&T2_H2
Mean (μm2/s)	1101	1340	1551
σ (%)	20	22	14

Table 3.- Pearson's correlation coefficient between overall subvirving time and statisctic of ADC histograms.

	T1_L	T1_H	T2_L	T2_H	T1&T2_L	T1&T2_H	T1&T2_H2
ρ	-0.30	-0.27	-0.20	-0.28	-0.30	-0.20	-0.26

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Biography

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