

Apparent Diffusion Coefficient Value of Gastric Cancer by Diffusion-Weighted Imaging: Correlations with the Histologic Differentiation and Lauren Classification

Zhengyang Zhou¹, Song Liu¹, Jian He¹, and Wenxian Guan²

¹Radiology, Drum Tower Hospital, School of Medicine, Nanjing University, Nanjing, Jiangsu, China, ²Gastrointestinal Surgery, Drum Tower Hospital, School of Medicine, Nanjing University, Nanjing, Jiangsu, China

Purpose

The purpose of this study was to evaluate whether the histologic differentiation and Lauren classification of gastric cancer do show correlations with apparent diffusion coefficient (ADC) value on diffusion weighted imaging (DWI).

Methods

Sixty-nine patients with 69 gastric cancer lesions underwent preoperative magnetic resonance imaging (MRI) (3.0T) and surgical resection. DWI was obtained with a single-shot, echo-planar imaging sequence in the axial plane (b values: 0 and 1,000 sec/mm²). Mean and min ADC values of each gastric cancer as well as normal gastric walls were obtained by two radiologists, who were blind to the histological findings. Histologic type, differentiation degree and Lauren classification of each resected specimen were determined by one pathologist. Mean and min ADC values of gastric cancers with different histologic types, differentiations and Lauren classifications were compared. Correlations between ADC values and histologic differentiation and Lauren classification were analyzed.

Results

The mean and min ADC values of gastric cancers, as a whole or separately, were significantly lower than those of normal gastric walls (all P values <0.001). There were significant differences of mean and min ADC values among gastric cancers with different histologic types, differentiation degrees and Lauren classifications (p<0.05). Mean and min ADC values correlated with histologic differentiation (r= 0.564, 0.578) and Lauren classification (r= -0.493, -0.481) significantly (all p<0.001).

Conclusion

The ADC values may be helpful as a noninvasive tool for evaluating gastric cancers' histologic features, such as histologic types, differentiation degrees and Lauren classifications.

References

1. Qiu MZ, Cai MY, Zhang DS, et al. J Transl Med 2013;11:58.
2. Onur MR, Ozturk F, Aygun C, et al. J Magn Reson Imaging 2012;36(3):672-7.
3. Caivano R, Rabasco P, Lotumolo A, et al. Cancer Invest 2014;32(5):184-90.
4. Joo I, Lee JM, Kim JH, et al. J Magn Reson Imaging 2014.
5. Avcu S, Arslan H, Unal O, et al. JBR-BTR 2012;95(1):1-5.