Perfusion MR Imaging Role In Predicting The Outcome Of High-Intensity Focused Ultrasound Ablation Of Uterine Fibroids

Nguyen MD, Bilgin K, Huynh QH, Pham NH

Pham Ngoc Thach University Of Medicine, Vietnam

PURPOSE OF STUDY
We investigated the role of Magnetic Resonance (MR) T1 perfusion based time-signal intensity (SI) curves of fibroid tissue compared to the myometrium in predicting the treatment outcome of MR-guided high intensity focused ultrasound (HIFU) ablation of uterine fibroids.

MATERIALS AND METHODS
40 women (39.9 ± 5.4 years with a range of 27-50 years) who underwent MRgHIFU ablation were divided into 2 groups based on the DCE-MRI at screening: group A (n = 20) if the time-intensity curves of fibroid is lower than that of myometrium (Fig. 1A, B) and group B (n= 20) if the time-intensity curves of fibroid is equal or higher than that of myometrium (Fig. 2A, B). The immediate non-perfused volume (NPV) ratio and fibroid volume reduction ratio at 6 months follow-up were assessed.

RESULTS
The mean diameter and volume of all fibroids were 71.1 mm ± 27.8 (29.0-137.0 mm) and 208.9 ml ± 161.6 (34.0-603.0 ml) for group A and 66.9 mm ± 23.0 (30.0-118.0 mm) and 154.7 ml ± 110.6 (12-478 ml) for group B, respectively. On immediate post MRgHIFU, NPV ratio was 96.5 % ± 4.9 (81.1-100 %) for group A and 60.5 % ± 20.6 (9.2-81.6%) for group B (p
The fibroid volume reduction ratio at 6 months was 52.9 % ± 13.8 (21.9%-72.3%) for group A and 5.4 % ± 11.8 (-20.9%-19.7%) for group B (p<0.001).

CONCLUSION
Our findings suggest that novel T1 perfusion based classification in the screening phase could be served as the MRI classification parameter not only for classifying the fibroids but also predicting the treatment outcome of MRgHIFU ablation.