

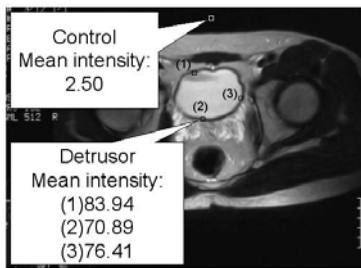
CAN MRI PREDICT THE DETRUSOR CONTRACTILITY?: QUANTITATIVE ESTIMATION OF DETRUSOR FUNCTION BY MRI IN PATIENTS WITH WEAK DETRUSOR.

Hypothesis / aims of study

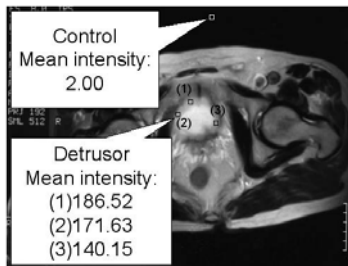
To determine the value of magnetic resonance imaging (MRI) on quantitative estimation of the detrusor musculature in patients with weak detrusor.

Study design, materials and methods

Nine male patients with weak detrusor (age: 67-78 years) and nine male normal subjects (age: 26-46 years) underwent IPSS questionnaire and MRI (0.3 T) without endoluminal coil. Pressure flow study was performed in all patients with weak detrusor. On the axial view of T2-weighted images, a region of interest (ROI) was randomly drawn at three sites in the bladder wall as the detrusor muscle and at one extracorporeal site (air) as the control. The value of mean intensity at each ROI was obtained using Adobe Photoshop (ver. 6.0). The detrusor intensity index was calculated as the mean intensity of the detrusor muscle divided by the mean intensity of the control. All data are expressed as the means \pm 1 SEM.



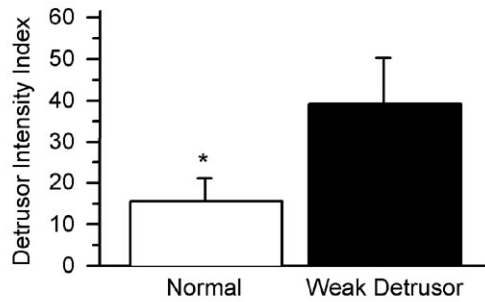
Normal



Weak detrusor

Results

IPSS were 1.8 ± 0.8 and 17.9 ± 1.8 in normal subjects and the weak detrusor group, respectively. The results of pressure flow study showed that the detrusor pressure was VW to W (+) and the obstruction was 0 to II on Shafer's nomogram. Under these conditions, the detrusor intensity index was greater in weak detrusor group (39.1 ± 11.2) compared with that in normal subjects (15.6 ± 5.6). There was no correlation between the age and the detrusor intensity index in each group. Furthermore the correlation between pdet.Qmax and the detrusor intensity index was not found in the weak detrusor group.



Values are mean \pm SEM, *: $P < 0.05$ vs Weak Detrusor Group

Interpretation of results

In this preliminary study, we found that the detrusor intensity index in weak detrusor group was significantly greater in comparison with that in normal subjects. The smooth muscle in detrusor could be visualized as dark layer as other muscle structures on the T2-weighted MR images. Therefore the change of the intensity in MR images at the detrusor might reflect the changes of the bladder smooth muscle such as the fibrous or ischemic change. Furthermore, our present study demonstrated that the change of detrusor function might not directly relate to the aging, since there was no correlation between the age and the detrusor intensity index.

Concluding message

We reported a new method of imaging analysis using MRI in the detrusor function. MRI is useful imaging test in quantitative evaluation of the detrusor function, since MRI can visualize the changes of detrusor in the voiding dysfunction and it is non-invasive imaging modality.