

The correlation between severity of male lower urinary obstruction and prostate morphological parameters measured by MRI

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Objective: To determine the correlation between severity of male lower urinary obstruction and prostate morphological parameters measured by MRI.

Method: MRI and urodynamic examinations were carried out for 62 men excluded the history of urethral trauma and diseases of nervous system and endocrine system. Taking the maximum flow rate (MFR) as grade criterion, the patients were divided into 3 groups: normal (MFR \geq 15ml/s), suspected lower urinary obstruction (15ml/s<MFR<10ml/s) and lower urinary obstruction (MFR \leq 10ml/s). The urethral length(UL) and three-dimensional length of whole prostate and central zone were measured respectively by the observer blinded of the urodynamic results. The total prostate volume(PV), central zone volume(CV) and central zone volume index(CVI, CV/PV) were calculated. ANOVA test, correlation analysis and multivariate linear regression analysis were used for statistical analysis.

Results: A moderate negative pairwise correlation was observed between MFR versus age with $r=-0.409$ and $p=0.001$. No correlation between age versus all morphological parameters were observed. A strong linear correlation between CV versus PV was observed with $r=0.956$ and $p=0.000$. The difference of age and PV in all the three groups is not statistically significant, whereas the difference of UL, CV and CVI between the normal and lower urinary obstruction group is statistically significant. UL and CVI are considered as correlative factors with the severity of lower urinary obstruction ($B=0.178$, $t=2.325$, $p<0.05$; $B=1.025$, $t=2.131$, $p<0.05$). **Conclusions:** UL and CVI are the useful morphological parameters for predicting the severity of the lower urinary obstruction.

□**Key words**□prostate, magnetic resonance imaging, urodynamics

Fig1:The correlation between severity of male lower urinary obstruction and prostate morphological parameters measured by MRI

	normal	Suspected obstruction	obstruction	F value	P value
Age	63.800 \pm 3.633	68.263 \pm 7.294	70.078 \pm 7.019	1.976	0.148
UL	3.440 \pm 0.945	3.800 \pm 0.711	4.468 \pm 1.084	4.534	0.015
PV	48.523 \pm 19.644	61.769 \pm 33.433	82.822 \pm 41.324	3.141	0.051
CV	25.462 \pm 10.281	45.901 \pm 29.096	64.716 \pm 38.312	3.999	0.024
CVI	0.530 \pm 0.009	0.716 \pm 0.186	0.761 \pm 0.142	5.040	0.010

UL: urethral length. PV: prostate volume. CV: central gland volume. CVI: central gland volume index=CV/PV.