

ULTRASOUND-ESTIMATED BLADDER WEIGHT IS A PREDICTIVE FACTOR FOR THE LONG-TERM RISK OF PROSTATECTOMY AND THE POSTOPERATIVE OUTCOME IN MALE PATIENTS USING ALPHA-ADRENOCEPTOR BLOCKERS FOR LOWER URINARY TRACT SYMPTOMS

Hypothesis / aims of study

Measurement of bladder weight has been established by means of transabdominal ultrasonography. It has been demonstrated that ultrasound-estimated bladder weight (USEBW) is increased by bladder outlet obstruction (BOO) and USEBW of 35g or more indicates the existence of BOO in Japanese male patients with lower urinary tract symptoms (LUTS) (1). Although bladder weight is obviously associated with BOO, little is known about the association between USEBW and the treatment outcome of alpha-adrenoceptor blockers or prostatectomy. We investigated the relationship between USEBW and the long-term risk of prostatectomy in male patients using alpha-adrenoceptor blockers for LUTS suggestive of BPH, and the relationship between USEBW and clinical outcome after prostatectomy as well.

Study design, materials and methods

USEBW of consecutive male patients over 50 years old with LUTS suggestive of BPH were estimated with transabdominal ultrasonography. Patients with poor visualization of anterior bladder wall by ultrasound were excluded from the study so as to avoid inaccurate measurements of USEBW. Finally, 97 patients were included into the analysis. An alpha-adrenoceptor blocker was administered in all patients as the first line treatment.

The clinical data were collected concerning the episode of prostatectomy in follow-up duration, prescribed medication after prostatectomy, and baseline parameters, e.g., USEBW, prostate volume, and total score of international prostate symptom score (IPSS). The prostatectomy percentage was calculated using Kaplan-Meier method. Predictive value of each baseline parameters for the risk of prostatectomy was evaluated with log-rank test (univariate analysis) and Cox proportional hazards model (multivariate analysis). The poor outcome after prostatectomy was defined as taking a medicine to improve LUTS 3 months after prostatectomy. The values of baseline parameters were compared using ANOVA between patients with poor outcome and those without poor outcome after prostatectomy.

Results

Prostatectomy was observed in 37 out of 97 patients studied. Prostatectomy rate was associated with high USEBW (35g or more) and sever LUTS (IPSS total score of 20 or more) ($p < 0.01$). Multivariate analysis revealed again that the significant risk factors for prostatectomy were high USEBW and sever LUTS ($p < 0.05$). The incidence of prostatectomy in 5-year follow-up was 78% in patients with high USEBW, while it was 36 % in those with normal USEBW (USEBW less than 35g).

Seven out of 37 patients that had undergone prostatectomy were taking a cholinergic drug for improving their LUTS 3 months after prostatectomy (poor outcome). The USEBW in patients without poor outcome was significantly heavier than that with poor outcome ($p = 0.013$). Prostate volume was also significantly different between the patients with poor outcome and those without poor outcome ($p = 0.005$), but IPSS total score was not so. The stepwise regression analysis revealed that USEBW was the sole parameter associated with the poor outcome after prostatectomy. The incidence of the poor outcome was only 4% (1 in 25) in patients with high USEBW, while it was 50% (6 in 12) in those with normal USEBW.

Interpretation of results

Sever LUTS, poor uroflow, decreased voided volume and enlarged prostate increases the risk of prostatectomy (2). This study showed the high USEBW was also the risk of prostatectomy,

being independent of prostate volume and LUTS. The patients with normal USEBW were not likely to be satisfied by prostatectomy. Measurement of USEBW is the non-invasive method for predicting BOO and seems to be able to predict the treatment outcome after commencing alpha-adrenoceptor blockers or prostatectomy.

Concluding message

USEBW can be regarded as a useful parameter that identify the patients with LUTS at risk of prostatectomy and also predict the outcome after prostatectomy.

References

1. Noninvasive quantitative estimation of infravesical obstruction using ultrasonic measurement of bladder weight. J Urol 157: 476-479, 1997.
2. Predictive factors for the long-term risk of re-treatment and prostatectomy in patients using tamsulosin for lower urinary tract symptoms. Abstract No. 587, ICS and IUGA 2004.