

AUTONOMIC RESPONSES DURING BLADDER HYDRODISTENTION REFLECT THE SEVERITY OF SYMPTOMS IN PATIENTS WITH IC/PBS

Hypothesis / aims of study

Previous studies have demonstrated elevated indices of sympathetic activity in patients with interstitial cystitis/painful bladder syndrome (IC/PBS). To evaluate the correlation between symptom severity and autonomic responses in patients with IC/PBS, we examined autonomic responses, including changes in blood pressure (BP) and pulse rate (PR), during bladder hydrodistention.

Study design, materials and methods

We investigated 32 IC/PBS patients who underwent bladder hydrodistention from March 2012 to June 2013. The anesthesia techniques were as follows: general 25 patients; spinal 6 patients; and 1 patient underwent both anesthesia in separate distentions. Twenty five patients who underwent holmium laser enucleation of the prostate (HoLEP) under general anesthesia were used as controls. PR and systolic and diastolic BP were measured before and during hydrodistention. Cystoscopic findings of glomerulation after hydrodistention were graded from 0 to 4 (in increasing severity).

Results

The spinal anesthesia patients exhibited little change in BP and PR during hydrodistention, which was similar to the findings observed in control patients. Autonomic responses during hydrodistention were more severe in patients with a preoperative visual analogue scale (VAS) bladder pain score ≥ 7 than in patients with a VAS score representing mild to moderate pain. Higher systolic BP elevation during hydrodistention was associated on linear regression analysis with a greater likelihood of a higher preoperative VAS score ($R^2=0.168$, $p=0.038$). Patients with Hunner's ulcer demonstrated pronounced autonomic responses during hydrodistention. A glomerulation grade of 4 was associated with greater autonomic responses than a less severe glomerulation grade. Preoperative maximal cystometric capacity was negatively correlated with the autonomic responses to hydrodistention ($R^2=0.320$).

Interpretation of results

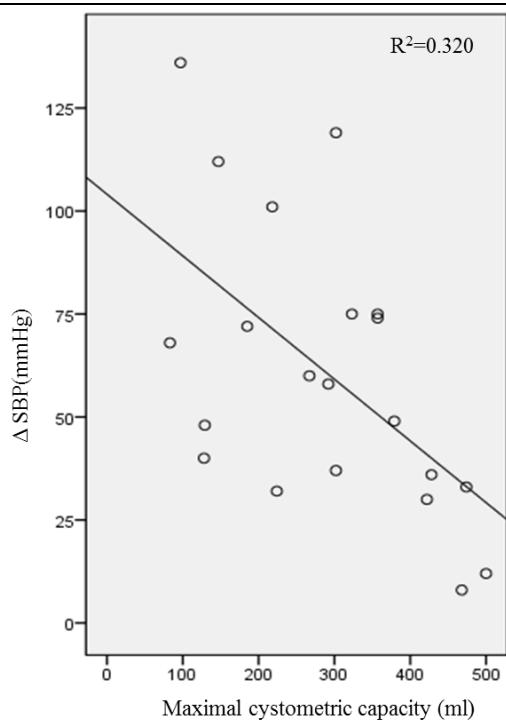
During general anesthesia, autonomic responses to bladder hydrodistention in patients with IC/PBS reflected the severity of symptoms. These elevations in SBP, DBP, and PR were not observed in those undergoing spinal anesthesia or HoLEP surgery, thereby suggesting possible spinal involvement in the development of IC/PBS. Exaggerated autonomic responses to hydrodistention could be used as a diagnostic tool and also a clinical marker of the severity of IC/PBS.

Concluding message

In this study, we found that autonomic responses including BP and PR during hydrodistention under general anesthesia were associated with the severity of symptoms in patients with IC/PBS, which could be used as a clinical marker of IC/PBS.

Table 1. Autonomic responses after the first hydrodistention in control and IC/PBS patients under spinal and general anesthesia

	Control (n=25)	Spinal Anesthesia (n=7)*	General Anesthesia (n=26)*	p value
SBP (mm Hg)				
Before HD	108.32±20.68	127.43±7.04	98.85±14.24	0.001
During HD	118.72±23.42	132.71±7.02	157.27±30.84	<0.001
After drainage	105.13±11.31	126.57±11.67	105.30±14.16	0.002
Δ SBP	10.40±19.03	5.29±3.35	58.42±32.30	<0.001
DBP (mm Hg)				
Before HD	64.64±11.85	70.43±6.45	57.46±10.50	0.009
During HD	72.32±17.36	71.43±8.79	98.15±25.77	<0.001
After drainage	60.88±10.15	68.57±6.11	61.22±12.90	0.312
Δ DBP	7.68±16.88	1.00±3.27	40.69±23.77	<0.001
PR (beat/min)				
Before HD	64.28±13.78	70.29±8.34	59.46±9.65	0.071
During HD	67.48±14.31	74.14±15.85	78.42±20.55	0.093
After drainage	60.25±13.39	65.71±7.97	61.13±11.43	0.593
Δ PR	3.20±12.68	3.86±10.82	18.96±19.28	0.002

**Figure 1.** Association between autonomic responses during the first hydrodistention session and maximal cystometric capacity on preoperative urodynamic studies, as determined by linear regression analysis.

Δ SBP represents the difference between the during HD and before HD values for SBP.

References

1. Kobi Stav, Erez Lang, Zacci Fanus, Autonomic Response During Bladder Hydrodistention in Patients with Bladder Pain Syndrome, J Urol 2012; 188, 117-121

Disclosures

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