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Received: 05-09-2018 / Revised: 28-10-2018 / Accepted: 8-11-2018

Abstract

Objective: To evaluate effect of second hydrodistension on symptoms of patients who have diagnosed interstitial cystitis and have been performed hydrodistension before. **Material-Methods:** Data of the patients who have diagnosed interstitial cystitis and were performed hydrodistension between June 2015 and June 2017 were retrospectively evaluated. Diagnosis of interstitial cystitis was done on three criteria according to clinical guidelines. Hydrodistension was performed by a single surgeon under spinal anesthesia. The bladder was distended with normal saline through a cystoscope to provide pressure of 80 cmH₂O. After hydrodistension for 5 minutes the bladder was evacuated, which might lead to hemorrhage of the apparently normal bladder mucosa (glomerulations). O'Leary-Sant's symptom and problem index (OS combined), Pelvic Pain and Urgency/Frequency (PUF) Patient Symptom Scale and the Likert visual analog scale (VAS) for pain were used to evaluate the severity of symptoms. After the hydrodistension, patients were followed-up by without medication. Second hydrodistension was performed when symptoms were recurred. **Results:** Total 17 patients were diagnosed interstitial cystitis. Symptoms of seven patients were not improved by first hydrodistension, so second hydrodistension was not performed to these patients. These seven patients were excluded. Total 10 patients were included the study. Median OS combined (24 vs 20.5 p= 0.356), PUF (33 vs 29 p= 0.113) and VAS (8 vs 7 p= 0.452) score were similar before and after second hydrodistension. **Conclusions:** Second hydrodistension is not effective in interstitial cystitis patients whom were treated hydrodistension before.

Keywords: Interstitial cystitis, hydrodistension, repeating.**Introduction**

Interstitial cystitis (IC) is a chronic disease of unknown etiology characterized by persistent irritating micturition symptoms and pain [1]. Etiological factors may include urine-borne toxic substances, autoimmune disorders, a defect in the protective bladder's mucous lining of glycosaminoglycans (urine-tissue barrier), neurogenic inflammation, and C-fiber activation [2,3].

Treatment options are that behavioral modifications, pelvic floor muscle exercise, oral agents, intravesical instillation, and neuromodulation [4]. Bumpus reported hydrodistension (HD) outcomes firstly in 1930 [5]. The effectivity of HD is nearly 50% for analgesia [6]. However, this effect sustains only six months [7].

We aimed to evaluate effect of second HD on symptoms of patients who have diagnosed IC and have been performed HD before.

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E-Mail: goxelle@yahoo.com**Material & Methods**

Data of the patients who have diagnosed IC and were performed HD between June 2015 and June 2017 were retrospectively evaluated. Diagnosis of IC was done on three criteria according to clinical guidelines [8], these criteria are lower urinary tract symptoms, frequency, hypersensitivity, or pubic perineal pain and exclusion of other diseases with similar symptoms. Glomerulations after HD in the absence of Hunner lesions (non-Hunner type IC) was included, presence

of Hunner lesions was not included the study. Patients who did not benefit from the initial procedure or received intravesical treatment and have chronic disease (Sjögren’s syndrome, rheumatoid arthritis etc.) which related with IC were excluded. HD was performed by a single surgeon under spinal anesthesia. The bladder was distended with normal saline through a cystoscope to provide pressure of 80 cmH2O. After HD for 5 minutes the bladder was evacuated, which might lead to hemorrhage of the apparently normal bladder mucosa (glomerulations). O’Leary–Sant’s symptom and problemindex (OSSI), Pelvic Pain and Urgency/Frequency (PUF) Patient Symptom Scale and the Likert visual analog scale (VAS) for pain were used to evaluate the severity of symptoms. After the HD, patients were followed-up by without medication. Only non-steroid or narcotic analgesic were prescribed for on-demand. Second HD was performed when symptoms were recurred.

Patients age, body-mass index, interval of between two HD procedures, OSSI, OSPI, PUF and VAS scores were recorded. Mann-Whitney U test was used for statistical analyze. SPSS package software 17 for windows (Chicago, Il) was used.

All procedures were conducted in accordance with the ethical standards of the institutional and/or national research committees and with the 1964 Helsinki Declaration and its later amendments or with comparable ethical standards. The authors conformed ethic rules of Committee on Publication Ethics and the International Committee of Medical Journal Editors. Human Research Ethics Committee and Institutional Review Board approvals and informed consent was not obtained due to retrospective nature.

Results

Total 17 patients were diagnosed IC. Symptoms of seven patients were not improved by first HD, so second HD was not performed to these patients. Total 10 patients were included the study. Median age was 58 (48-62) and body-mass index 29 (27-35). The median time to therapeutic failure after first HD on symptom scores are seen table-1. Each patient’s OS combined and PUF scores changing are shown figure 1 and 2. No major complication was seen on any patient. Urinary tract infection was seen on three patients after first HD and three patients after second HD; all of patients were treated with just oral antibiotics.

Table 1: Patients’ outcomes

	Before First HD	After First HD	P value	Before Second HD	After Second HD	P value
OS Score	26 (15-36)	8.5(3-15)	0.005	24 (14-36)	20.5 (12—36)	0.356
PUF Score	33.5 (24-45)	8 (2-12)	<0.001	33 (28-40)	29 (24-40)	0.113
VAS Score	8 (6-10)	2 (0-5)	<0.001	8 (6-10)	7 (5-10)	0.452

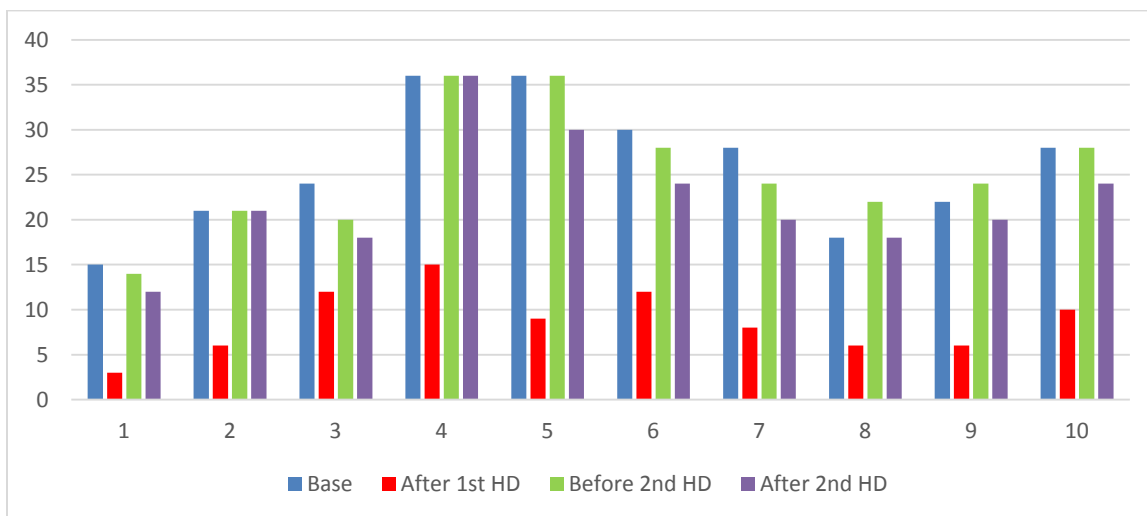


Figure 1: O’Leary-Sant combined symptom index and problem index scores

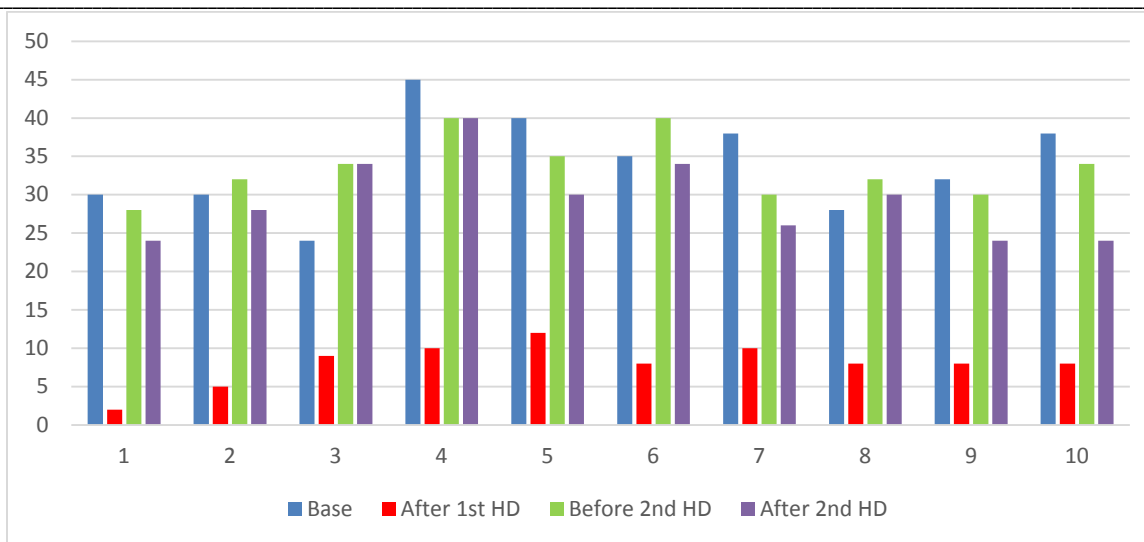


Figure 2: Pelvic Pain and Urgency Frequency combined symptom scores

Discussion

HD is one of the treatment choice for IC[8]. The mechanism of HD efficacy is not clear [9]. In the rat-based study, induced ischemia of the bladder may cause relation of neuroproliferative factors, that suggesting that the restoration of damaged nerve endings [10]. In the clinical-based study, HD has limited persistence of efficacy, and initial response sustained in about a half of patients [11]. In the study, first HD improved 10 of 17 patients. We excluded 7 patients whom symptoms were not improved by HD. After first HD, we have not given any oral or intravesical treatment, because any approved treatment option was not present in the city which these patients live until 2017. In this reason, we had to do second HD when symptoms recurred.

Pain is nociceptive of chronic inflammation and neuropathic pain activated by afferent nerves innervating the bladder in IC patients [2,12]. Twenty-seven percent of the patients with IC have neuropathic pain [13]. By a hypothesis, chronic bladder inflammation may cause to increase number of inflammation-related proteins/receptors, and this phenomenon induce afferent neuroplasticity that responsible for pain [14]. We think inflammation in IC is progressive process. First HD may do consolidate or delay inflammation by restoration of nerve-ending. Same effect could not achieve by second HD. Because, chronic inflammation process has continued. For this reason, HD might be first option as not only diagnostic

but also treatment option for first stage, but after symptoms recurrence second HD is not treatment option.

Small number of patients may be limit of the study. More significant results may achieve with more numbers of patients. Retrospective nature may cause lack of study, but prospective design may cause subjective results. This is first study which investigated second HD effect.

Conclusions

Second HD is not effective in IC patients whom were treated HD before. Oral or intravesical treatments should be considered for these patients whom symptoms were recurred after first HD.

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Conflict of Interest: None

Source of Support: Nil