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EFFECT OF NAFTOPIDIL (ADRENERGIC ALPHA1D/A RECEPTOR ANTAGONIST) INHIBITS THE AUTONOMIC RESPONSE DURING BLADDER HYDRODISTENSION IN AN ANIMAL MODEL OF PAINFUL BLADDER SYNDROME/IC

Hypothesis / aims of study
Recent reports have suggested an increased sympathetic activity in painful bladder syndrome(PBS)/IC patients and an increase in blood pressure (autonomic response) during hydrodistention has been observed in these patients.[1] Whether this increase in blood pressure (BP) is a pain response or due to central sensitization and/or neuroplasticity is not known. However, the degree of BP increase may correlate directly with the severity of symptoms.[2] Exogenous adrenergic stimulation has shown to result in a pelvic pain response in animals. Naftopidil, an adrenergic alpha $1_{D/A}$ receptor antagonist, is known to inhibit the micturition reflex and there is probable evidence that the receptors of naftopidil (adrenergic alpha $1_{D/A}$ receptor) are distributed not only in plasma and prostate but also cerebrum and spinal cord.[3] We investigated whether intrathecal (i.t.) naftopidil can inhibit the autonomic response during bladder hydrodistention in an animal model of interstitial cystitis.

Study design, materials and methods
Adult female Sprague-Dawley rats were treated with intravesical protamine sulfate and lipopolysaccharide and BP during hydrodistention (intravesical pressure of 140-150mmHg for 1 minute) were measured 1 week later. After placing an intrathecal catheter in the L6-S1 spinal level, increase in BP from baseline were measured before, 5, and 30 minutes after naftopidil injection (i.t.). In the second experiment, changes in BP before, 5, 30 minutes after intrathecal saline injection. Subsequently, BP changes after further naftopidil injection in the same rats were recorded.

Results
Significant increase in BP was observed before and 30 minutes after intrathecal administration of naftopidil. However, BP increase was inhibited when hydrodistention was performed 5 minutes after naftopidil injection (i.t.). Injection of saline (i.t) resulted in a significant increase in BP, however, further injection of naftopidil blocked the increase in BP during hydrodistention.

Interpretation of results
Naftopidil inhibited the autonomic response during bladder hydrodistention in an PBS/IC animal model.

Concluding message
Adrenergic $alpha_{1D/A}$ receptor in the spinal cord may play a role in the autonomic change observed in PBS/IC patients. It could also be possible that it is involved in pain modulation.

References
1. Stav K, Lang E, Fanus Z et al: Autonomic response during bladder hydrodistention in patients with bladder pain syndrome. J Urol 2012; 188: 117.
2. Kim SW, Jee SH, Moon SY et al: Autonomic responses during bladder hydrodistention reflect the severity of symptoms in patients with IC/PBS. 2014 ICS abstract #15
3. Sugaya K, Nishijima S, Kadekawa K et al: Spinal mechanism of micturition reflex inhibition by naftopidil in rats. Life Sci 2014; 116: 106.

Disclosures
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