

## LETTER

## Control of autonomic dysfunction with an $\alpha_2$ agonist in a man with SCI undergoing sperm retrieval

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Dear Editor,

Spinal cord injury (SCI) patients with lesions above the level of the T6 are at risk of autonomic dysfunction (AD), a potentially life-threatening condition. Normally, efferent parasympathetic nervous system output to the cardiovascular system originates in the medulla's dorsal motor nucleus and travels extraspinal through the vagus nerve to the end organ targets. However, loss of supraspinal inhibitory input to the sympathetic nervous system can result in dysregulation of reflex responses to various external stimuli characterized by an unrestrained sympathetic discharge. Anesthetic agents administered during sedation, in AD patients, including benzodiazepines, propofol combined with opioids, cause extensive vasodilation and bradycardia, risking hazardous hemodynamic instability to an already impaired sympathetic system. Dexmedetomidine is a selective  $\alpha_2$ -agonist that provides anxiolysis, sedation, and analgesia without respiratory compromise and is used as an adjuvant to other anesthetic agents, with its main adverse effects being hypotension and bradycardia.

A 32-year-old man with a history of traumatic SCI at the level of T4 was admitted for testicular sperm extraction (TESE). Preoperatively, the patient's autonomic function was evaluated using the Ewing test, the reference standard clinical test for estimating cardiovascular autonomic dysfunction. The test revealed subnormal sympathetic function with a decline in systolic pressure (SP) of more than 20 mmHg during the orthostatic hypotension test. The parasympathetic function was relatively normal; no heart rate (HR) responses were observed during deep breathing [excitation/inhibition (E/I) ratio] or from the lying to the sitting position, although there was marked HR variability during the Valsalva maneuver.

Sedation was induced with one mcg/kg of dexmedetomidine followed by 0.5 mcg/kg/h, one  $\gamma$ /Kg fentanyl bolus, and 3 mg/Kg/h propofol. The patient was breathing spontaneously in 50 % of mixed O<sub>2</sub>/room air. Anesthesia time was 85 min. The procedure was uneventful, with no episodes of sympathetic or parasympathetic overdrive. No episodes of hypotension (drop in SP >20 %) or bradycardia (HR <45/min) were observed, the infusion rate of dexmedetomidine was stable, and it was discontinued at skin closure.

TESE is a relatively painful procedure due to the rich innervation of the testis and scrotum. In our case, despite the fact that the surgical field's peripheral innervation was completely disrupted, the sympathetic autonomic system's dysfunction could be the reason for uncontrolled hypertension and ventricular arrhythmia. Moreover, intraoperative distension of viscera or other stimuli below the level of the lesion may trigger AD. Since the Ewing test was positive, dexmedetomidine was chosen to attenuate the sympathetic nervous system's possible activation and maintain hemodynamic stability during surgery<sup>1</sup>. A significant but rare concern with dexmedetomidine is that initial stimulation of peripheral alpha-1 or alpha-2b receptors due to higher plasma concentrations following bolus dose might result in vasoconstriction, which, in a patient with AD, may cause uncontrolled, possibly life-threatening hypertension<sup>2</sup>. Our case indicates that dexmedetomidine provides hemodynamic stability in AD patients.

**Keywords:** Autonomic dysfunction, sperm retrieval, dexmedetomidine, spinal cord injury

### Conflict of interest

None of the authors have any competing interest.

### References

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