Letters to Editor

Thyroid storm: Does dexmedetomidine have a role?

Sir,

Our patient was a 35-year, 35-kg woman, with history of neck swelling, weight loss, oligomenorrhoea, palpitations, difficulty in breathing on lying supine and difficulty in swallowing. Her symptoms had increased rapidly over the last 1 year. Her thyroid profile was free triiodothyronine-15.16 pmol/L, free thyroxine-48.19 pmol/L and thyroid-stimulating hormone-0.07 mIU/L. She was started on tab carbimazole 20 mg, tds and tab propranolol 40 mg bd which led to an improvement of her symptoms. Computed tomography scan and fine needle aspiration cytology were suggestive of follicular neoplasm and she was scheduled for a total thyroidectomy. On examination, she was anxious and nervous, pulse rate (PR) was 83/min; blood pressure (BP) was 106/70 mmHg, with fine tremors of the outstretched arms and tongue. Eye signs were not present. Kocher’s test, Pemberton’s sign and Berry’s sign were negative. Patient was accepted for anaesthesia 6 weeks after starting appropriate patient consent forms. In the form the Declaration of patient consent is used. Our patient’s score was 70 (agitated = 10, fever = 25, tachycardia = 25, precipitating event: thyroid surgery = 10).

Patients with hyperthyroidism who are not rendered euthyroid preoperatively are at a serious risk of developing perioperative thyroid storm which has a high mortality.[1] This life-threatening exacerbation of the thyrotoxic state can present 4–6 h postoperatively after thyroid surgery in uncontrolled hyperthyroid patients, as happened in our patient. Thyroid storm is essentially a clinical diagnosis; thus, to assess the degree of dysfunction, the Burch and Wartofsky score[2] is used. Our patient’s score was 70 (agitated = 10, fever = 25, tachycardia = 25, precipitating event: thyroid surgery = 10).

We would like to highlight the use of dexmedetomidine in our patient. Dexmedetomidine is increasingly being used in patients on mechanical ventilation[3] and for attenuation of haemodynamic responses to laryngoscopy and intubation.[4] It has been found to be a useful anaesthetic adjunct in regional and general anaesthesia[5] and has been used to effectively suppress catecholamine levels in pheochromocytoma.[6] The intraoperative use of dexmedetomidine for prevention of thyroid storm is very infrequently reported. Xiong et al.[7] reported using dexmedetomidine as an adjuvant in combined spinal-epidural anaesthesia in a parturient with uncontrolled hyperthyroidism. We used dexmedetomidine intraoperatively in total thyroidectomy to successfully achieve haemodynamic stability in our poorly controlled patient. However, the infusion was stopped at the end of surgery with a resultant thyroid storm 4 h later and we feel that continuation of dexmedetomidine infusion postoperatively may have prevented this life-threatening complication of thyroid storm. Further research is required to establish the potential role of dexmedetomidine in the prevention of thyroid storm.

Preoperatively her PR was 165/min. Inj. fentanyl 100 μg and inj. hydrocortisone 100 mg were given intravenously (IV). Inj. metoprolol 3 mg was given in aliquots of 1 mg each which decreased the PR to 120/min. A bolus of 35 μg dexmedetomidine IV was given over 10 min, bringing down her PR to 100/min. Infusion of dexmedetomidine was then started at 0.3 μg/kg/h and fentanyl infusion at 20 μg/h. Her PR stabilised between 85 and 90 beats/min and BP around 110/60 mmHg. Surgery lasted for 4 h and was uneventful. Post extubation, PR was 100/min and BP was 100/60 mmHg. Dexmedetomidine infusion was stopped and patient was shifted to the postoperative ward with a fentanyl infusion at 20 μg/h for postoperative pain. After 4 h, she became agitated, anxious and restless, temperature was 103.2 °F, PR-172/min, BP-136/90 mmHg and electrocardiogram (ECG) showed multiple ventricular premature contractions. Chest was clear on auscultation. Random blood sugar level was 145 mg% and arterial blood gas (ABG) analysis showed mild acidosis. Burch and Wartofsky score was 70 indicating a thyroid storm. Oxygen was started and IV fluids rushed, inj. hydrocortisone 300 mg was given IV stat. Tab. propranolol 60 mg and tab. propylthiouracil 600 mg were administered through the nasogastric tube. After 30 min, Lugol’s iodine 6 drops in half glass water was given. As a part of supportive therapy, paracetamol was given and tepid sponging was done. In an hour, she settled, PR decreased to 123/min, temperature came down to 100.8 °F; ECG showed normal sinus rhythm, chest remained clear and ABG improved. The reports of the biochemical parameters showed elevated liver enzymes and elevated FT3 and FT4 levels. She remained stable and was discharged on postoperative day 11.

We used dexmedetomidine in a parturient with uncontrolled hyperthyroidism.[5] It has been found to be useful as an alternative to general anaesthesia.[6] The authors certify that they have obtained all appropriate patient consent forms. In the form the...
patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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Submitted: 22-Apr-2020
Revised: 25-May-2020
Accepted: 05-Jun-2020
Published: 31-Jul-2020

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