Sixty-year-old lady, operated for emergency coronary artery bypass grafting surgery, was tracheostomized due to prolonged need for ventilatory support. As per the protocol, the patient was to be given nebulization every 6 hours by attending nurse. On one occasion, nebulizer apparatus was attached to the catheter mount, which was attached to the tracheostomy, and the other end of nebulizer apparatus was attached to the breathing circuit connected to the ventilator. Suddenly after 15 s ventilator started giving the alarm of inadequate delivery of tidal volume. Nurse checked for any disconnection or leakage in the circuit. Saturation of the patient began to come down from 99% to 85% and patient's heart rate came down from 90 to 50/min. Immediately Intensive Care Unit (ICU) doctor was called upon, and considering nonexpansion of the chest, breathing circuit along with nebulizer kit was removed and attending doctor ventilated the patient with Ambu bag with 100% oxygen. Injection mephentermine 5 mg intravenous was given rapidly. After few seconds, saturation increased to 99% with stable hemodynamics. After the episode, reason for the event was searched. Ventilator machine with breathing circuit was checked for any leakage with test lung. It was functioning optimally. Tracheostomy tube blockage or misplacement was ruled out as the patient could be ventilated with Ambu bag very smoothly. At last nebulizer kit was checked and it was observed that one end of nebulizer apparatus was blocked with transparent cap [Figure 1]. Even with the cap, nebulizer apparatus can be fitted very easily with catheter mount connected to the tracheostomy tube. Patient could not be ventilated due to capped (blocked) nebulizer leading to the event.

Prospective, observational ICU study has reported 7.04% of airway accidents leading to hypoventilation and hypoxia.[1] These airway accidents mainly included blocked tube, unplanned extubation (self and accidental), endobronchial intubation, kinked tube, and leaking cuff. ICU mishap due to defective nebulizer as in the present case has not been described in the literature.

Saline nebulization is commonly used for adequate humidification and prevention of encrustation of tracheal tubes.[1,2] Manufacturer of nebulizer kit should pay the attention to the production of such nebulizer apparatus with a transparent cap that can easily go unnoticed and fit into the breathing circuit easily with cap. Error in checking nebulizer kit can lead to fatal ICU accident.

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Figure 1:
Nebulizer apparatus with transparent cap

Scorpion bite, a sting to the heart and to coronaries resulting in Kounis syndrome

Sir,
In the very interesting paper published in IJCCM,[1] the authors reported on a 14-year-old-boy who was bitten by scorpion and developed chest pain, vomiting,
loose stools, cold sweating, raised jugular venous pressure, tachycardia and hypotension. Laboratory findings showed increased troponin T, proBNP and CPKMB, bilateral lung fluffy shadows, reduced ejection fraction, and ST segment elevation in II, III, aVF, V3, V4, V5, and V6, and T-wave inversion in I, aVL, V1 and V2 leads compatible with acute myocardial injury and pulmonary oedema. This case raises the following important questions on pathophysiology, treatment, and differential diagnosis of scorpion envenomation:

- Centruroides and parabuthus scorpions are associated primarily with neuromuscular toxicity, whereas androctonus, buthus, and mesobuthus scorpion envenomation is associated with cardiovascular involvement, resulting from hyperstimulation of autonomic centers release of catecholamines and vasoactive peptides. Since venom specific immunoglobulin E (IgEs) have been identified by using skin tests and IgE immunoblots and mast cell degranulation and histamine release are also involved in scorpion venom-induced-inflammatory pain, hypersensitivity cardiovascular involvement is also present.[2]

- Myocardial infarction has been reported following scorpion envenomation on some occasions.[3,4] Scorpion envenomation may result in immediate late and delayed hypersensitivity reactions in susceptible individuals. Cardiovascular toxicity implies venom amount-dependent action with progressing effects, while hypersensitivity means inflammation causing either Kounis hypersensitivity-associated acute coronary syndrome or hypersensitivity myocarditis, which are not venom amount dependent and may arise at any time during or soon after envenomation. It seems likely that the described patient developed coronary vasospasm manifesting as Type I variant of Kounis syndrome progressing to myocardial injury.[3] Hypersensitivity or toxic myocarditis could not be confirmed because neither coronary angiography nor magnetic resonance imaging was available. Coronary angiography is normal in myocarditis while in Kounis syndrome may reveal the coronary spasm. Magnetic resonance imaging shows subendocardial concentration of gadolinium in Kounis syndrome while in myocarditis the gadolinium is concentrated in subepicardial areas.[6]

- Several studies have shown no significant difference in patients on steroids and in steroid-free patients in terms of mortality and intensive care unit length of stay. The hydrocortisone hemisuccinate regimen has limited effect in critically ill envenomated children and, therefore, it should not be recommended.[6]

Antivenom combined with prazosin and dobutamine is indicated for cardiovascular effects and benzodiazepines for neuromuscular involvement. Adrenaline and fluid resuscitation – not glucocorticoids, antihistamines, or mast-cell stabilizers – are the mainstays of treatment for scorpion venom-induced anaphylaxis. However, administration of antihistamines and mast cell stabilizers, but not hydrocortisone, could be used as a supplementary treatment of life-threatening scorpion envenomation. The described patient developed a pulmonary edema and received corticosteroids but not prazosin. Alpha receptor stimulation plays an important role in the pathogenesis of pulmonary edema. The use of prazosin, a postsynaptic alpha blocker, is recommended for significant sympathetic symptoms. Cardiogenic pulmonary edema with arterial hypertension responds favorably to prazosin. Oral prazosin is fast acting, easily available, and highly effective. Corticosteroids are beneficial in interstitial noncardiogenic pulmonary edema.

Scorpion envenomation is a complex condition, which requires rigorous action, meticulous treatment and careful follow-up.

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