



Figure 1
CT with arrow pointing to the tip of sprinkler in the brain.

center. The last meal was about 4 h prior to anesthetic induction. On examination, he was awake and alert, lying in right lateral decubitus position (RLD), in moderate distress, and pain and vital signs were within normal limits. Sprinkler spike was 6–8 in length and was supported by gauze. The airway evaluation revealed Mallampati 1 with good mouth opening. CT scan showed the spike inside the brain matter about 2–3 cm (Figure 1). The patient was taken to the operating room on a gurney and transferred to the OR table while carefully supporting the spike to avoid further damage. The initial plan was to do a rapid sequence induction (RSI) in RLD position; at this time a suggestion was made to cut the spike with a rod cutter so that the risk of further damage could be minimized as well as the patient could be supine for ease of airway management. The spike was cut about 1 in from entry to the skin and the patient was placed supine. Standard ASA monitors were applied and a RSI was performed with propofol and succinylcholine, and a 4.5-cuffed endotracheal tube was placed in the trachea without any difficulty. The spike was removed successfully. The trachea was extubated at the end. The patient was transferred to the PACU and then to the PICU for 2 days, and was later discharged home on postoperative day 4.

Rapid sequence induction and intubation is standard of care for all full stomach patients to avoid stomach contents regurgitation/aspiration when emergent surgery is needed because of trauma or other pathology (2). Lateral position (RLD or left lateral position) is known to result in deterioration of laryngoscopic view, delay in the time to

intubate, and increased chance of failed intubation (3). Attempt to perform RSI in the RLD position could be dangerous resulting in difficult or lost airway; and it might have been necessary to put the patient supine, which could result in further injury to brain structures because of altered spike position. Cutting the spike with a rod cutter facilitated the airway management successfully and without further sequelae. We present first case where a spike was cut off to facilitate a more controlled induction of anesthesia.

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Anaphylaxis, beta blockade and the Kounis syndrome

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SIR—In the very interesting report published in the September issue of the Journal (1) concerning anaphylactic shock in a beta-blocked child it was stated that allergology investigation was not carried out. However, the patient received aprotinin during surgery, rocuronium during anesthesia, epinephrine for the shock and developed a typical rash with hives later in the recovery period. Rocuronium and aprotinin may act as potential allergens and clinical studies indicate that allergic patients simultaneously exposed to several allergens have more symptoms than mono-sensitized individuals. A recent study also showed that IgE antibodies with different specificities can have an additive effect with even small amounts of corresponding allergens able to trigger mediator release when the patient is simultaneously exposed to them (2). In cases of anaphylaxis of patients receiving beta blockers the usual dose of epinephrine might be inadequate, but in other patients, due to unopposed α -adren-ergic effect may raise and promote vasospasm (3,4). On

the other hand, a therapeutic dilemma, sometimes, arises in the sulfite allergic patient (5). Every commercially available preparation of epinephrine contains, as preservative, according to *Drug Facts and Comparisons* (a standard pharmacy reference published by Wolters Kluwer and updated monthly) sodium metabisulfite. Sodium metabisulfite is commonly used as antioxidant in food and pharmaceutical industry. There are reports of hypersensitivity, anaphylaxis and even death from Kounis syndrome (allergic coronary vasospasm) from sulfite administration (6,7). Anaphylactoid shock has been reported during epidural anesthesia for caesarian section in which the responsible agent was metabisulfite an additive agent of epinephrine containing local anesthetic (8). Only few physicians are aware of this treacherous association.

It is difficult to assess hypersensitivity to sulfites because it relates to direct mast cell degranulation and rarely involves the presence of IgE antibodies. Positive skin tests to metabisulfites could be carried out, but their mechanism and interpretation is complex and desensitization strategies have been proved unsuccessful after 3 months but with 82% response after 6 months (9).

Epinephrine is still the primary drug for anaphylaxis (10), but avoidance of medications, which contain metabisulfites as preservatives, including epinephrine, has been suggested for patients with definite allergy to sulfites. Methoxamine, a potent alpha agonist, should be an alternative for cases not responding to multiple doses of epinephrine or in cases in which epinephrine is contraindicated (11). However, methoxamine is no longer available in some countries.

In a trial comparing epinephrine and methoxamine for the treatment of cardiopulmonary arrest no differences were found in return of spontaneous circulation, neurologic status and survival (12).

We agree with Momeni *et al.* (1) who discussed the use of glucagon and /or β -agonists for refractory anaphylaxis in patients receiving β -blockers. However, it should be remembered that rarely glucagon administration can induce itself severe anaphylactic shock (13). It should be also mentioned that corticosteroids and colloids, used in the treatment of anaphylaxis, have also been implicated as causative agents for anaphylaxis in some occasions and should be avoided in sensitized individuals (14–17).

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High-frequency jet ventilation in the presence of airway stenosis leads to inadvertent high PEEP levels

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SIR—In a recent publication about airway management with combined high-frequency jet ventilation in children, Mausser *et al.* rejected the possibility of air trapping and barotrauma if jet streams are delivered above any stenosis (1). This ventilation technique has been described