Use of nebulised adrenaline in the management of steroid-resistant stridor

Sir—Stridor is a distressing symptom that can be difficult to treat adequately. We present the case of a 42-year old lady in whom we achieved good symptom control through the use of nebulised adrenaline.

Case history

The patient presented with a one-year history of headaches, a left hemiparesis and a seizure. Investigations revealed multiple cerebral metastases and a lung primary in the left upper lobe with multiple pulmonary metastases. There was no mediastinal lymphadenopathy. Whole brain radiotherapy was given but she was too unwell for any further investigation or treatment to the primary tumour.

Stridor was one of her main symptoms and caused her considerable distress. Dexamethasone was prescribed both for the stridor and for headache because of raised intracranial pressure. A dose of 32 mg daily was given due to the concomitant prescription of phenytoin. Despite this, stridor remained an overwhelming symptom.

Nebulised 1:1000 adrenaline (epinephrine) was given with immediate relief of the stridor that lasted 2–3 h. We used 1 mL of 1:1000 adrenaline and diluted to a volume of 5 mL with 0.9% saline. The patient experienced no side-effects. No tachycardia was noted on monitoring her heart rate. Repeating the nebuliser four times each day achieved good symptom control. Although the stridor returned shortly before the next dose of adrenaline was due, it was no longer reported as overwhelming by the patient.

Discussion

Stridor is a high-pitched inspiratory sound resulting from obstruction, compression or oedema of the larynx. In patients with lung tumours, involvement of the recurrent laryngeal nerve results in vocal cord paralysis. Laryngeal oedema as a result of the proximity of tumour may also cause stridor.

Adrenaline is an adrenergic agonist that acts at both α and β receptor subtypes. Remington and Meakin postulated that the stimulation of α-adrenergic receptors causes vasoconstriction and thus a reduction in oedema of the larynx. Cardiac side effects associated with the administration of adrenaline result from stimulation of β-adrenergic receptors. The absence of cardiac problems following the administration of nebulised adrenaline may be because of limited systemic absorption as a result of the upper airway obstruction.

Nebulised 1:1000 adrenaline is used in the accident and emergency department and by otolaryngologists caring for patients with acute airway obstruction. Anecdotally, many doctors have found it to be effective at relieving stridor in the acute setting. A review of the literature identifies case studies where nebulised adrenaline has been administered as part of the management of critically ill patients. The aetiology of the upper airway obstruction described in these reports varies.

Larger studies have focused on the use of adrenaline nebulisers in the management of children with croup. These studies describe much greater experience in the use of nebulised adrenaline, however, the outcome measures used are not easily transferred to the palliative care setting. These randomized controlled trials also reported on adverse effects following the administration of the adrenaline. Tachycardia lasting up to 60 min, tremor, hyperactivity and mild hypertension were described.

Conclusion

We found the use of nebulised adrenaline to be of great benefit in relieving stridor that was described by the patient as overwhelming. No adverse effects were experienced. Nebulised adrenaline provides a further option in the management of stridor in the specialist palliative care setting for patients who do not experience adequate symptom control with the use of steroids and who are not well enough to be considered for radiotherapy.

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References
