

## Unexpected sneezing after a peribulbar injection in a patient for elective cataract surgery

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Sneezing or the sternutatory reflex, inborn in most animals, is a primitive neuromuscular physiological response to irritation. Sometimes, unusual sneezing occurs during and immediately after a peribulbar block, which is generally performed with a local anaesthetic in awake patients. We present a case report of an awake elderly male who experienced unexpected continuous sneezing immediately after the removal of the needle used for the peribulbar block, which was subsequently relieved with pheniramine maleate.

**Keywords:** peribulbar block, pheniramine maleate, sneezing

### Introduction

Sneezing during induction or during general anaesthesia in humans is not described in the current literature. A previous report of sneezing was described in an animal model, with chlormethiazole sedation-supplemented spinal anaesthesia.<sup>1</sup> Vigorous sneezing during and just before withdrawal of the needle during a peribulbar block can be hazardous, and needs to be treated immediately. Sudden unexpected sneezing during the insertion of a peribulbar block under propofol sedation has been reported in humans.<sup>2</sup> Sneezing fits have been commonly reported following exposure to sunlight, also known as photoptarmosis and “sun sneezing”, in 18–35% of the population.<sup>3</sup>

### Case report

A 75-year-old male without any co-morbidity presented for cataract surgery. Informed consent was taken from the patient to report on this case. The general physical, as well as systemic examination, including relevant investigations, were within normal limits. The patient's past history revealed that he had received a subarachnoid block five years earlier for hernia repair. As per the records, an injection of bupivacaine intrathecally and lignocaine for skin infiltration, were used for the procedure and the surgery was uneventful.

An awake peribulbar block was planned for the present surgery. A 20-G intravenous cannula was secured in the left forearm and standard monitors were attached. Preparation of the eye was performed with betadine, gatiquin, tropicamide, homatropine and occuflur (flurbiprofen) eyedrops. Side-effects from the topically administered drugs were not observed. The local anaesthetic solution of 10 ml volume for the peribulbar block was prepared by mixing lignocaine (2%) 6 ml and bupivacaine (0.5%) 4 ml, together with hyaluronidase (50 units per one ml). During performance of the peribulbar block, the introduction of a needle for the inferolateral block and drug injection was uneventful. The introduction of the needle for the supraorbital block was safe, but after the drug injection, as soon as needle was withdrawn, the sneezing reflex was provoked and continued eight times per minute, for the next four minutes. The desired level of the block was achieved within five minutes. As the patient did not experience spontaneous relief, an injection of pheniramine maleate 22.75 mg was given intravenously. The sneezing stopped thereafter within a minute. No further

sneezing episode occurred in the next 10 minutes. The patient's vital parameters remained stable. A local reaction was not observed in the eyes in the form of oedema, redness or itching. Postoperatively, the patient was interrogated with regard to a history of sneezing episodes, especially on exposure to light. However, nothing suggestive was found. The patient was discharged the next day and follow-up at one month was uneventful.

### Discussion

Sneezing or the sternutatory reflex, inborn in most animals, is a primitive neuromuscular physiological response to irritation. The sneezing centre consists of neurons in the trigeminal nucleus and adjacent reticular formation. The afferent arc from the anterior and the upper nose leads via the anterior ethmoidal branch of the first division of the trigeminal nerve [the ophthalmic nerve (V<sub>1</sub>)] and from the lower nose and the orbit via the second division of the trigeminal nerve (the maxillary nerve). The afferent fibres relay in the pons and the medulla. The efferent pathways relay from the medulla via the facial nerves and spinal nerves to the intercostals muscles and diaphragm, and also from the medulla to the sphenopalatine ganglion. They are distributed to the nasal musosal blood vessels and glands, causing secretions and nasal congestion, which, in turn, may stimulate further sneezing.<sup>2</sup> Bright light, stimulation of the olfactory nerve and stimulation of the skin of the face or nose are other stimuli of the medullary centres.<sup>4</sup> Allergens can bind to immunoglobulin E-loaded mast cells in the nasal mucosa, which leads to sneezing, resulting from histamine release acting by binding to the receptors on the target cells, and leads to sensory neural stimulation.

Direct trigeminal nerve stimulation and an increase of ocular sensitivity to light leads to photophobia and photic sneezing, and is supported by the fact that hair pulling and eyebrow plucking may stimulate sneezing in sensitive individuals.<sup>5</sup>

Severe sneezing after local anaesthesia injection during intravenous propofol hypnosis has been linked with the autosomal dominant compelling helio-ophthalmic outburst (ACHOO) syndrome. The ACHOO syndrome is present in approximately 25% of the population, when sneezing is provoked upon exposure to bright sunlight.<sup>6</sup>

Abramson reported sneezing with a peribulbar block under a light plane of anaesthesia (propofol sedation). This author suggested that some patients demonstrate a photic sneeze response to local irritation of  $V_1$ . This stimulation may be caused by the technique employed to place the block, i.e. peribulbar, with more peripheral placement of needle, and perhaps would not be demonstrated with the intracanal placement of the injecting needle.<sup>2</sup> The same report was noted in two asymptomatic patients with no history of allergies or epilepsy. One was a 68-year-old white man undergoing cataract surgery, and the other was a 65-year-old white woman undergoing supraciliary brow ptosis repair, during thiopental hypnosis.<sup>7</sup>

Ahn et al reported vigorous sneezing in 5% of patients in a study on 381 patients receiving periocular anaesthetic injection under intravenous sedation. These authors reported no sneezing in another group of 341 patients receiving periocular anaesthetic injection without intravenous sedation, and concluded that awareness of the unusual and potentially dangerous sneeze phenomenon is needed when periocular anaesthetic injections are delivered under intravenous sedation.<sup>8</sup> In another study, Morley et al observed that propofol-based intravenous sedation, in combination with periocular local anaesthetic injections, induced sneezing in approximately one sixth of patients. These authors further concluded that a history of photic sneezing, bilateral or upper eyelid infiltration, deep sedation and concurrent administration of midazolam increased the risk, whereas adjunctive opioid use reduced it.<sup>9</sup>

In the present case, this elderly patient denied a history of allergy to any drug and prior sneezing episodes. The patient was in an awake state and did not receive any intravenous sedation, hence a very light plane of anaesthesia could not be the reason for the poorly understood, primitive brain stem reflex coming to the fore. Therefore, this presentation is unique. Empirically, this patient was treated with intravenous pheniramine 22.75 mg under the presumption that the histamine release could be the reason for the sneezing. The patient was relieved symptomatically, in contrast to case reports of patients under general anaesthesia who were relieved after deepening of hypnosis.<sup>2,7</sup>

Antihistaminics effectively exert the competitive antagonism of histamine for the histamine-1 ( $H_1$ ) receptors. Itching and sneezing are suppressed by an antihistaminic blockade of the  $H_1$  receptors on the nasal sensory nerves. Therefore, antihistamine therapy represents the main therapeutic option. Most  $H_1$

antihistaminics have been found to inhibit sneezing and to lessen the increase in vascular permeability, with therapeutic equivalence.<sup>10</sup>

Our aim in this case report was to draw attention to the unusual occurrence of sneezing during and immediately after a peribulbar block in a patient who did not have any history of photic sneezing and who did not receive intravenous sedation. Vigorous sneezing during and just before withdrawing the needle during a peribulbar block can be hazardous to the patient as it can cause needle displacement and inadvertent injury to the eye structure, hence needs to be treated immediately. We were unable to draw a definite conclusion as to the implicating factors of this phenomenon in the present case.

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