


---

**Palatal tremor after brachial plexus anaesthesia**

Editor—Palatal tremor (PT) is a rare disorder characterized by rhythmic movement of the soft palate.1 It can be distinguished into symptomatic and essential. In the first case, ear clicks can be present and palatal movements are due to involvement of the levator veli palatini within other clinical findings; olivary pseudohypertrophy at brain imaging can be found after a delay of 1–6 months.2 In essential PT, ear clicks are more present and often an early complaint, while the contractions are located in the tensor veli palatini muscle which is innervated by the trigeminal nerve, and imaging evaluation usually is normal.3 Pathological studies outlined a role of the dentato-rubral-olivary pathway.

Regarding drug-induced hyperkinetic movement disorders, the association with anaesthetics has already been reported for spinal myoclonus. We now report the first case of PT after brachial plexus levobupivacaine administration.

A 49-yr-old woman came to our attention with a 2 month history of ear clicking sounds associated with involuntary movements of the soft palate. She complained of symptoms a few hours after a brachial plexus levobupivacaine 0.5% injection for surgery of the ulnar collateral ligament. Physical examination showed intermittent bilateral rhythmic activity of the palatal musculature at rest, and unperceived bilateral higher rhythmic contraction of the chin muscles after voluntary activation. The palatal contraction could not be inhibited by external sensory stimuli, whereas chin contraction could be suppressed by selective tactile stimuli of the trigeminal area. The patient also complained of bilateral ear clicks. No other postoperative complications were documented. The remainder of the neurological and otorhinolaryngological examinations were normal. The tremors did not ameliorate after clonazepam and carbamazepine intake. Routine blood tests showed normal findings. Brain MRI performed at the onset...
and after 2 months were normal. EMG study of the mentalis muscle showed pseudorhythmic bursts of about 100 ms duration at 5–6 Hz during mouth opening, while bilateral concentric needle exploration of the levator veli palatini showed pseudorhythmic bursts of 200 ms duration at 0.8–1 Hz (Fig. 1). No abnormal muscle activity was recorded from other muscles. A broad neurophysiological evaluation was normal.

As reported, the occurrence of hyperkinetic disturbances after spinal or epidural injection of local anaesthetics (i.e. spinal myoclonus), and also side-effects due to excessive dosage or inadvertent intravascular injection during local anaesthesia can present. To the best of our knowledge, our case represents the first description of PT after anaesthetic drugs. Although the pathophysiology of drug-induced hyperkinetic movement disorders is unclear, some authors postulated a reduced activity of suprasegmental inhibitory descending pathways or increased excitability of facilitatory mechanisms due to central nervous system drug-related toxicity. In our case, the central generator is supposed to be located along the dentato-rubral-olivary connections, susceptible to drug toxicity and responsible of the PT; while the chin tremor may appear as a dystonic-like tremor reduced by tactile stimulation.

Our case further suggests to consider anaesthetics as a possible cause of drug-induced hyperkinetic movement disorders, and PT as a rare complication of anaesthesia.

Declaration of interest
None declared.

P. Tocco*
M. Turri
M. Acler
L. Bertolasi
Verona, Italy
*E-mail: pietocco@hotmail.com

Caveats of pressure control: lung non-protective ventilation

Editor—Lung-protective ventilation (LPV), in which the tidal volume is restricted to 6 ml kg\(^{-1}\) and the plateau pressure to \(<30 \text{ cm H}_2\text{O}\), is the accepted standard of care for patients with acute lung injury (ALI) and the acute respiratory distress syndrome (ARDS). A growing body of evidence supports the implementation of LPV in patients with other forms of acute respiratory failure and even in patients with healthy lungs undergoing general anaesthesia for elective surgery. The evidence behind LPV is largely based upon studies that have used volume-controlled modes of mechanical ventilation. Pressure-controlled modes of ventilation offer the theoretical advantages of better patient–ventilator synchrony and improved patient comfort. However, in critically ill patients, airway resistance and lung compliance change on a minute-to-minute basis; therefore, the delivery of a fixed inspiratory pressure may result in gross under- or over-ventilation. Although pressure-controlled modes of ventilation have been the mainstay of ventilation bundles in British intensive care units (ICUs) for decades, conciliating this strategy with a lung-protective model may prove difficult.

Our large medical/surgical ICU is located in a tertiary care centre. A Bi-level/pressure support-based, nurse-led ventilation strategy is the default for all patients, with patients generally weaned from Bi-level to pressure support as soon as able. We retrospectively analysed data extracted from the electronic patient records of 200 mechanically ventilated patients sequentially admitted to ICU for mechanical ventilation during a 6 month period (November 2013–April 2014). The tidal ventilation administered was determined by averaging the hourly tidal volume recorded over the first 24 h of admission. An ‘ideal’ tidal volume (6 ml kg\(^{-1}\)) was calculated for each patient based on ideal body weight. The average age of the study population was 58, with an average duration of mechanical ventilation of 4.1 days and an ICU length of stay of 6.1 days: 43% of patients were admitted after abdominal or vascular surgery; 29% of patients were ventilated for neurological protection; 20% of patients had ALI/ARDS on admission; and 5% had community-acquired pneumonia.

Analysis of the data revealed that average tidal volume received by the patients during their first 24 h of admission was 536 (40) ml, which represents an excess of 88.2 (30) ml over the ‘ideal’ lung-protective tidal volume (\(P<0.05\)). Moreover, in patients with ALI/ARDS, the tidal volume delivered was 544 ml (30), which represents an excess of 95 (25) ml (\(P<0.05\)) over ideal volumes. These figures demonstrate that, in our institution, the application of a pressure control-based ventilation strategy resulted in the delivery of ventilation significantly larger than the recommended LPV standard. This effect was observed in both mandatory (Bi-level) and spontaneous (pressure support) modes of ventilation.

While the effect of restricting tidal volumes to 6 ml kg\(^{-1}\) in spontaneously ventilating patients remains controversial, given the state of the evidence, it seems reasonable to adhere to LPV recommendations at least in the initial acute stage of respiratory failure, where the potential for ventilation-induced lung injury is highest. Achieving this with the use of pressure-control-based ventilation requires regular and meticulous titration of pressures, significantly increases the nursing workload, and, as demonstrated by our results, may be ultimately unfeasible in a busy tertiary referral centre. The recently developed dual-control modes of ventilation, which are pressure-based but have auto-regulation mechanisms that restrict delivered volumes, may represent a promising middle ground that warrants further assessment in the clinical setting.

Declaration of interest
None declared.

I. de Asua*
S. McKechnie
Oxford, UK
E-mail: ignaciodeasua@yahoo.co.uk

doi:10.1093/bja/aeu393

Indications of extracorporeal life support in poly-trauma

Editor—Major trauma is a leading cause of death, particularly among young patients. New strategies in management are needed to improve poor outcome of severe trauma. Conventional therapies for post-traumatic cardiovascular shock and acute pulmonary failure may sometimes be insufficient and even dangerous.\(^1\)\(^2\) New approaches in trauma care and advanced treatments are needed to modify the actual therapeutic strategy and treatment protocols. Extracorporeal life support (ECLS) has proven to be effective in acute cardiopulmonary failure of different aetiologies, in particular when conventional therapies fail.\(^3\)\(^4\)\(^5\)

We are using ECLS as a rescue therapy in severe poly-trauma patients with a refractory clinical setting (cardiogenic shock, cardiac arrest, and/or pulmonary failure): the rationale for using ECLS in trauma patients is to treat refractory pulmonary and cardiopulmonary failure, providing adequate systemic perfusion, avoiding consequent multi-organ failure, and permitting organ recovery.\(^6\)\(^7\) From our experience, we have identified several pre-ECLS patient characteristics useful in predicting ECLS treatment appropriateness.

Declaration of interest
None declared.

I. de Asua*
E-mail: ignaciodeasua@yahoo.co.uk

doi:10.1093/bja/aeu394