Case Report

BJMP 2012;5(3):a528

Case Presentation: Reflex Anoxic Seizures and Anaesthesia

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Reflex anoxic seizures ('RAS') may present, as potentially life threatening events, but these are often preventable. They are most common in preschool children (but can occur in any age) and more so in females. As a cause of seizures they are not rare; one study estimated a frequency of 8 in 1000 preschool children1, but they are often misdiagnosed. The pathophysiology of RAS is vagally mediated – a noxious stimulus causes a supranormal vagal discharge resulting in bradycardia and then astystole2. This then results in cerebral under perfusion and hypoxia. During this time the patient is often noted to become very pale with dusky lips, initially flaccid and then tonic with rigid extension and clenched jaws. They may then have a generalised convulsion, often with rolling eyes and urinary incontinence. The patient spontaneously recovers (the whole episode lasting around 30 to 60 seconds) and will feel somnolent, often remaining pale for a while.

From this description it can be easily understood how such an event can be misdiagnosed as epilepsy; however it is not associated with the uncontrolled neuronal discharge of epilepsy and if monitored by EEG this is absent2. It may also be mistaken as breath-holding attacks (where intra-thoracic pressure restricts cerebral perfusion) or Stokes- Adams attacks (where there is abnormal electrical function of the heart).

The noxious stimuli responsible can be many different things. Ocular pressure2, venepuncture3, anaesthetics4, accidental trauma and fear have all been implicated. If these stimuli cannot be prevented, management is normally just supportive (positioning, protection from trauma, oxygen) and allowing the fit to self-resolve[U1] . Further management can involve atropine5 (either acutely of preventatively), maintenance anticonvulsants6 (though these often just stop the fitting but not the syncope) and even pacemaker [U2] insertion7.

The case we encountered was that of a 20 year old female student, presenting for a planned day case removal of a molar tooth. She was otherwise fit and well with no other past medical history, only taking the combined oral contraceptive pill. Her history with RAS started at age 1, when she was admitted to hospital following two seizures. The seizures occurred every few months and she was provisionally diagnosed as suffering from epilepsy, with prophylactic treatment started. However, as she grew older she was able to describe how the attacks were not associated with a preceding aura, but rather an unpleasant stimulus (such as accidental injury). A new diagnosis of RAS was made and the antiepileptics were stopped without the seizures becoming more frequent. As she entered late childhood and adolescence the frequency of the seizures became less, but (atypically) they did not stop entirely. On preassessment she reported being seizure free for just over a year and was anxious that today could precipitate another.

After consideration, we decided to proceed with anaesthesia with the following measures. The patient was kept calm by having a clear explanation of what to expect before coming to theatre, and then was reassured by an affable theatre team (who had been informed of her condition). Atropine was drawn up and available if vagal over stimulation occurred, as was suxamethonium in case of emergency airway intervention. For cannulation, cold spray was used along with distraction. Induction was with propofol (under full monitoring) and anaesthesia was maintained with sevoflurane/nitrous oxide via LMA. To prevent pain as a potential trigger, fentanyl (at induction) and paracetamol (after induction) were given and local anaesthetic (lidocaine) was administered before any surgery. Emergence was kept as smooth as possible by removing the LMA prior to any gagging and coughing and manually supporting the airway until she was awake.

With these measures the procedure was uneventful and the patient could be discharged home as planned. We hope this case report will help improve awareness and understanding of RAS, and the steps that can be taken peri-operatively to help ensure safe anaesthesia.

Competing Interests
None declared
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