

CASE REPORT

# Postoperative hemiparesis following tonsillectomy

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## Abstract

We report a rare complication following a routine elective tonsillectomy. A 32-year-old woman woke up from general anaesthesia with left sided hemiparesis. She underwent extensive investigations, which were normal. At follow-up neurology clinic she was given a new diagnosis of hemiplegic migraine and commenced on treatment. This case draws attention to a rare cause of postoperative hemiparesis. Hemiplegic migraine is a differential diagnosis for postoperative motor deficit after exclusion of an acute neurological or metabolic event.

## INTRODUCTION

Postoperative hemiparesis is an uncommon and challenging problem. There are several causes ranging from innocuous to life threatening conditions, therefore prompt assessment and investigation is required. Acute neurological deficit after general anaesthesia has a wide list of differential diagnoses. These include residual postoperative neuromuscular blockade, stroke, seizure, acute demyelinating disorder, intracranial infections, brain tumours, metabolic disturbances, hemiplegic migraine and somatoform disorder. We present a case of postoperative hemiparesis that is particularly relevant to anaesthetists and surgeons.

## CASE REPORT

A 32-year-old female had a tonsillectomy due to two previous episodes of peritonsillar abscess. She had previous uneventful general anaesthetics for caesarean section and bilateral breast augmentation. Her medical history included anxiety and depression, iron deficiency anaemia and heartburn. She was taking citalopram, and allergic to Elastoplast. Her occupation was hairdresser and she was an ex-smoker. The only family history of note was that her sister had epilepsy.

A tonsillectomy was performed last on the theatre list using bipolar technique. There were no intraoperative complications. The general anaesthetic was routine for tonsillectomy. Agents used included fentanyl, propofol, atracurium, dexamethasone, morphine and ondansetron. Analgesics were paracetamol and diclofenac, and reversal agents were neostigmine and glycopyrrolate. Postoperatively in theatre recovery area the nurse noted the patient's eyes rolling upwards. The on-call medical registrar reviewed her immediately. The patient complained of left sided limb heaviness. On examination she was dysphasic, her left arm and leg were numb with power 4/5, she had left facial partial weakness and mild photophobia. The rest of the systems examination was normal. She was admitted under the care of neurology for urgent investigations.

The immediate investigations were directed at excluding metabolic and intracranial complications such as cerebral hypoxia, haemorrhage, embolism, or thrombosis. Laboratory blood tests including basic metabolic panel, full blood count and a blood gas were unremarkable. An urgent computed tomography (CT) head did not show any intracranial pathology. An electroencephalogram (EEG) did not show any epileptiform activity. A magnetic resonance imaging (MRI) brain scan with epilepsy protocol did not show any structural abnormalities.

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On the second hospital day the patient complained of a headache. On examination muscle power in her left arm and leg were still 4/5, however, her facial weakness had recovered. Variation in motor power was observed and a suspicion of pseudoneurologic syndrome was raised. After two nights admission for observation her symptoms had improved although not fully recovered, and she was discharged.

At postoperative follow-up review in neurology clinic she reported several years of headaches lasting 12 h, mainly affecting the left frontotemporal area and around her left eye. These episodes were associated with sensitivity to light, nausea, dizziness and tiredness. She admitted to three to four similar attacks per month. In the month preceding her operation she also experienced three episodes of left sided limb weakness associated with her headaches. She attended the Emergency Department when she first experienced left sided weakness, and was discharged with a normal CT head scan and advised for follow-up with her General Practitioner. By the time of her tonsillectomy date she remained uninvestigated and undiagnosed. In light of this information and normal investigation results, a clinical diagnosis of hemiplegic migraine was made in the follow-up neurology clinic. She was started on Topiramate.

## DISCUSSION

Hemiplegic migraine, one of the rarest forms of migraine with aura, has a prevalence of 0.01% [1, 2]. Few cases of hemiplegic migraine after general anaesthesia are reported in the literature [3–7]. In all these cases there was considerable diagnostic difficulty. All patients underwent extensive investigations, and some were initially misdiagnosed and provided with unnecessary treatment. A number of perioperative factors may precipitate a migraine attack, such as stress, anxiety, bright lights, hypoglycaemia [3, 4]. Hypoperfusion is thought to lower the threshold for development of aura in migraines [8], which may play a role as a trigger.

Hemiplegic migraine is characterized by reversible episodic motor weakness, that is also accompanied by other aura symptoms such as impairment in vision, speech or sensation [1, 9]. The average age of onset is 12–17 years [1]. As in our case, the patient also experienced dysphasia and numbness. Aura is defined as a reversible focal neurological deficit [8]. The underlying mechanism for aura is believed to be cortical spreading depression (CSD) [8]. Typical migraine with aura show CSD activity beginning in the occipital lobe, whilst in hemiplegic migraines the frontal motor cortex is the site of activity [8]. Onset of symptoms is usually gradual over 20–30 min but can be sudden and persist for a few hours or rarely up to four weeks [1]. Headache typically occurs during the aura but infrequently may be absent [1]. Known precipitants for hemiplegic migraine include acute stress, lack or excessive sleep, emotions, exertion, head trauma, drugs, diet, extensive sensory stimulation or may occur spontaneously [1, 3]. Hemiplegic migraine is the only migraine variant that can be classified as familial or sporadic [1, 5]. Migraine with unilateral motor symptoms (MUMS) is a subtype of hemiplegic migraine. Risk factors for MUMS include white, female and history of depression [6]. The distinguishing factor in MUMS is give-way weakness [6, 9]. This is

described as a sudden loss of resistance during muscle strength testing in at least two sites on one side of the body [6, 9]. Our patient fits the demographic for MUMS and the variation observed in motor strength during examination may have been due to give-way phenomenon.

Investigations for a patient with focal neurological deficit and headache should be directed at ruling out cerebrovascular disease especially if the attack is new in onset, or prolonged or in the absence of family history of migraine [1]. This may involve CT and MRI head, EEG and lumbar puncture if required [1]. The pharmacological treatment consists of abortive and preventative strategies as for typical migraine [1]. However, use of triptans is relatively contraindicated in hemiplegic migraine due to concern about cerebral vasoconstriction [1].

In conclusion, this case has brought attention to the rare event of a hemiplegic migraine in the immediate postoperative period. The characteristics of hemiplegic migraine are headache associated with unilateral motor weakness that is episodic and reversible, accompanied by at least one more aura. An awareness of atypical presentations such as absence of headache is important. Whilst hemiplegic migraine should be considered in the event of postoperative motor deficit, investigations should be directed at ruling out an acute cerebrovascular event.

## CONFLICT OF INTEREST STATEMENT

None declared.

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