

Case Report

Laryngeal spasm after general anaesthesia due to *Ascaris lumbricoides*

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Postoperative upper airway obstruction during recovery from general anaesthesia may have several causes. This is a report of a young girl who developed laryngeal spasm as a result of an ectopic roundworm *Ascaris lumbricoides*.

Accepted for publication 12 April 2013

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Published by John Wiley & Sons Ltd

Background

MORE than 1.5 billion people are infected with the three main soil-transmitted helminth infections: *Ascaris lumbricoides*, *Trichuris trichiura*, and hookworm.^{1,2} Fever and general anaesthetics tend to animate adult worms that will then migrate from their usual habitat and emerge from the nasopharynx or anus.³ This is a report of a young girl who developed laryngeal spasm as a result of an ectopic *A. lumbricoides*.

Case report

A young girl (approximate age 7) was admitted to Médecins Sans Frontières' trauma centre in Kunduz, northern Afghanistan. She was one of several patients coming in during a multiple casualty incident resulting from an improvised explosive device at the local market. She was triaged as a red patient, meaning she was deemed to have major life-threatening injuries that were salvageable. After insertion of a chest drain during primary survey in the red area she went straight to surgery. Pieces of shrapnel had entered her right posterior chest, penetrating her right lung, diaphragm, and liver. She was in haemorrhagic shock grade IV at time of intubation with ketamine 0.7 mg/kg and suxamethonium 1.5 mg/kg, and anaesthesia was maintained with morphine and halothane. After packing of her liver laceration, she was taken for stabilization in the intensive care unit (ICU), and blood transfusion was given after donation from a surviving relative. She

received benzyl-penicillin and metronidazole IV for 5 days. She was mechanically ventilated for the first 18 h and was then extubated due to lack of other staff that could care for a ventilated patient.

She made a remarkable physical recovery in the first week, but was clearly mentally traumatized by the event and the loss of her mother in the same explosion. She was continuously whimpering, had an interrupted sleep pattern, was apathetic, and refused to talk to anyone. In order not to inflict further trauma, it was decided to give her a general anaesthetic for removal of a large number of stitches on her back, chest, and abdomen. She was given diazepam 0.1 mg/kg and ketamine 1 mg/kg in the ICU, and maintained SpO₂ around 97% with spontaneous ventilation on 2 L O₂ from an oxygen concentrator. No repeat dosages were needed, and she slept in the recovery position for the following hour. At this point, she suddenly developed upper airway obstruction with falling SpO₂ from what appeared to be laryngospasm. A triple airway manoeuvre (head tilt, jaw thrust, and mouth opening) was performed, and while she was reaching for the self-inflating bag valve resuscitator and suction, part of a worm protruded from her mouth. She quickly recovered with oxygen and positioning upon removal of a 30 cm long female *A. lumbricoides* from her larynx (Fig. 1).

Collaborative information at a later stage revealed that the patient's family had travelled to town (where the explosion happened) in order to see a doctor. The patient and one of her siblings had been



Fig. 1. *Ascaris* worm removed from the patient's larynx.

unwell with fever, cough, and dyspnoea for an unknown period prior to the explosion. These symptoms were ascribed to her injuries when she was admitted. There were no signs of airway obstruction or urticaria. There were no laboratory facilities at the time to check for eosinophilia or serological testing for antibodies to *Ascaris*, and chest X-ray only showed pathology from the trauma.

She was successfully treated with a single oral dose of 400 mg albendazole, as evidenced by no further eggs on stool microscopy.⁴

Discussion

More than 1.5 billion people are infected with the three main soil-transmitted helminth infections: *A. lumbricoides*, *T. trichiura*, and hookworm.^{1,2} The gastrointestinal tract of a child living in poverty in a less developed country is likely to be parasitized with at least one, and in many cases all three, soil-transmitted helminths, with resultant impairments in physical, intellectual, and cognitive development.² *Ascaris* eggs from infected humans found in soil or dust are swallowed and liberate larvae as they pass through the stomach and small intestine. These invade the intestinal mucosa, and are carried via the portal, then systemic, circulation to the lungs. Here the larvae mature for 10–14 days, penetrate the alveolar walls, ascend the bronchial tree, and are swallowed. Upon reaching the small intestine, they develop into adult worms where they can live for

1–2 years. Lactose intolerance and malabsorption of vitamin A and other micronutrients may occur, but otherwise intestinal worms are rarely noticed unless passed in the stool. In infected children, the worm burden can cause intestinal obstruction; and in adults, worms can enter and block the ampullary orifice of the common bile duct, causing hepatobiliary and pancreatic disease symptoms.³

In hindsight, this patient may have suffered from *Ascaris* pneumonitis prior to admission. Fever, cough, dyspnoea, wheeze, urticaria, and transient eosinophilia may occur in a proportion of those infected during the migration of larvae through the lungs. Symptoms usually resolve spontaneously within 10 days.¹ Fever and general anaesthetics tend to animate adult worms, who will then migrate from their usual habitat and emerge from the nasopharynx or anus.³ In this case, an adult worm ascended the patient's oesophagus and caused laryngospasm upon reaching the epiglottis.

A. lumbricoides continues to be one of the commonest human parasitic infestations worldwide and has an increasing prevalence in industrialized nations as a consequence of population migration.^{1,5} If possible, deworming should be performed prior to general anaesthesia in endemic areas.

Conflicts of interest: None.

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