ACUTE AIRWAY OBSTRUCTION DUE TO *ASCARIS LUMBRICOIDES* IN A VENTILATED CHILD[A] ,[B]

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ABSTRACT:
Ascaris lumbricoides or roundworm is a nematode causing infestation in about 1.3 billion people worldwide. We report a case of a 7-year-old patient who had head injury. He was admitted to the intensive care unit for mechanical ventilation after craniotomy and evacuation of extradural haemorrhage at the left temporoparietal area. While weaning off mechanical ventilation two days after admission, he developed an acute airway obstruction. Flexible bronchoscopy revealed a tube like foreign body obstructing the right and left bronchus. Emergency rigid bronchoscopy under general anaesthesia extracted an eight-centimetre long *Ascaris lumbricoides*. The patient's ventilation and oxygenation improved drastically and he was discharged home 3 weeks later.
Key word: *Ascaris lumbricoides*, airway, obstruction, ventilation

CASE REPORT:
A 7-year old Malay boy had head injury due to a motor vehicle accident. He was admitted to the intensive care unit (ICU) after a craniotomy and evacuation for temporoparietal extradural haemorrhage. The estimated blood loss during the surgery was 800ml. He was resuscitated with blood and crystalloids. The Glasgow Coma Scale on admission to ICU was 8/15.
In the intensive care, he received intermittent positive pressure ventilation via a size 5.5 uncuffed endotracheal tube. Infusion with vecuronium for muscle relaxant and sedation with midazolam was administered during the cerebral protection period. The patient's lung compliance was good and the inspired oxygen concentration was 50%.
After 24 hours upon admission to ICU we discovered the left chest movement was diminished and the air entry on the same side was also reduced. However his condition improved after chest physiotherapy and endotracheal tube suction. There were no changes with his oxygenation and he remains normocapnia. Chest X- ray was performed and revealed left upper apicoposterior lobe collapse. The spacing of the lower lobe was suggestive of loss of lung volume. The endotracheal tube placement was well above the carina and thus excluded endobronchial intubation.
Upon completion of cerebral protection, which was of the normal 48 hours duration, we removed the muscle relaxant. Unfortunately during this weaning off period, his condition progressively deteriorated. There was an increased in airway pressure and reduced air entry particularly on the left side of the lung. The hypoxaemia was worsening despite giving100% inspired oxygen. Arterial blood gases revealed severe hypoxaemia with respiratory acidosis. Patient was ventilated manually but not much improvement was noted. Endotracheal tube was changed and no blockage with mucus plug was observed. We proceeded with flexible bronchoscopy via the endotracheal tube. A yellowish tube like substance was seen at the lower end of trachea, sitting on the carina and the ends of that object snuggling into both the right and left main bronchus. The patient was then put under general anaesthesia to remove the foreign body with a rigid bronchoscope. The object was removed in two parts and it was identified as an Ascaris *lumbricoides* (roundworm), which was 8 cm in length.
After the procedure, his ventilation and oxygenation markedly improved. A repeat chest X-ray revealed good lung expansion. His weaning off from ventilation was successful. He was discharge to the ordinary ward and eventually discharge home three weeks later.

DISCUSSION:

Ascaris lumbricoides is among the medically important worms belonging to the phylum Nematode (roundworms) that are the parasites of the human gastrointestinal tract. Ascarasis is a globally distributed nematodal infection and is a common intestinal parasite in the tropical and temperate regions. It is estimated that 1.3 billion people are infected with ascaris worldwide[1]. Infestation by *Ascaris lumbricoides* is still endemic in various part of the world. Acute illness related to *ascaris* is estimated around 12 million cases per year with approximately 10,000 deaths globally[2]. Population at risk for this infestation is those who stayed in areas with sub-optimal sanitation, practiced poor personal hygiene, and have a poor educational background. *Ascaris lumbricoides* is transmitted through ingestion of agricultural products or food contaminated with the parasite eggs.

Acute problem arises from *ascaris* infestation commonly occur along the gastrointestinal tract (GIT). Intestinal obstruction due to large volume of the parasites can occur and not infrequently requires surgical removal. The *ascaris* might also enter various pockets or tracts along the GIT and elicit an inflammatory reaction such as acute cholelithiasis, acute pancreatitis and acute appendicitis. Adult *ascaris* could perforate the intestinal wall and deposit its egg in the peritoneal cavity. Both the parasite and its egg may create granulomatous changes or pseudotumour.

Lung involvement occurs during the larva stage of *ascaris* life circle[3]. Larval pulmonary migration is usually asymptomatic. Loeffler's syndrome occurs during heavy infestation of *ascaris lumbricoides*. In this syndrome, patient presents with symptom of pneumonia and the blood stained sputum may contain *ascaris* larvae. Deposition of adult *ascaris* in the lung is not part of the life circle of *Ascaris lumbricoides*. The habitat for adult *ascaris* is in the upper part of the small intestine[3].

A case of *ascaris* lodged in a pyopneumothorax has been reported. In this case the mature *ascaris* migrated from the intestine and went through a broncho-pulmonary fistula.

Upper airway obstruction amongst ICU patients after extubation of the endotracheal tube has been reported before [4], [5]. The ascaris was coughed-up in one patient and it has to be removed through direct laryngoscopy in the other case. Fatal cases due to adult ascaris in the lungs had also been reported [5], [6].

In our case, an adult *ascaris* was localized in the carina, which caused sudden airway obstruction. In heavy infestation, adult ascaris may crawl through the oesophagus to reach the pharynx and eventually enter the trachea and bronchus. Patient was on an uncuffed endotracheal tube when this incident occurred. Although the lungs are not the normal habitat for adult *ascaris*, any attempt of migration out of the lung was impossible in this case. The child had been on an endotracheal tube for two days prior to the sudden drop in the oxygen saturation. The presence of an endotracheal tube will impede the migration of *ascaris*.

Airway obstruction is a life-threatening condition and one must act fast to avoid fatality. In the ventilated patient, any suspicion of a foreign body should be evaluated by flexible fibreoptic bronchoscopy and therapeutic rigid bronchoscopy may be necessary.

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