

breathing spontaneously on a laryngeal mask. The post-operative phase was uneventful and after brief duration of observation in recovery, the patient was transferred to the ward.

On the first post-operative day, patient complained of breathlessness and wheezing. He was moved to the intensive care unit (ICU) and was initially treated with nebulised levo salbutamol and budesonide; steroid cover was provided with methyl prednisolone and other supportive measures including antibiotics and analgesics. Subsequently the patient expectorated an *Ascaris* worm and a diagnosis of *Ascaris* pneumonia (Loeffler's pneumonia) was made. Antihelminthic therapy with albendazole was initiated which resulted in resolution of respiratory symptoms.^[7] Patient was observed for two more days in ICU and transferred to ward as he was completely asymptomatic. He was discharged the following day with the advice for a follow-up after a week and reevaluation 2 months later.

Anaesthesia and *Ascaris* pneumonia (Loeffler's syndrome)

INTRODUCTION

Ascariasis is the most common helminthic infection, with an estimated worldwide prevalence of 25%. *Ascaris lumbricoides* may cause various complications during the perioperative phase depending on the developmental stage which may include, respiratory obstruction, bronchospasm, and pneumonitis.^[1-6] This report highlights the importance of considering parasitic infection as a diagnosis in patients presenting with eosinophilia for elective surgical procedures.

CASE REPORT

An 89-year-old gentleman was admitted for bilateral inguinal hernia repair. Patient was relatively well except for having undergone bilateral cataract surgeries in the past. The patient's physical examination and routine laboratory investigations revealed raised eosinophil count (26%). The patient denied any history of allergy or parasitosis. Electrocardiogram, plain chest X-ray and an ultrasound scan of the abdomen were essentially normal. Echocardiogram revealed a reduced left ventricular diastolic compliance. This patient underwent the corrective surgery uneventfully, under general anaesthesia,

DISCUSSION

Ascaris lumbricoides is a worldwide public health problem. Most infections are asymptomatic, although non-specific gastrointestinal tract symptoms like abdominal pain, nausea, vomiting, dry cough may occur in some patients. During the larval migratory phase, an acute transient pneumonitis known as Loeffler's syndrome may develop, characterised by fever, cough, wheeze (hypersensitivity) and marked eosinophilia. Acute intestinal obstruction may develop in patients with heavy infections. The adult worms can be stimulated to migrate ('erratic ascariasis') under conditions of stress (e.g., fever, illness, or anaesthesia, subtherapeutic antihelminthic drugs) and cause various complications such as peritonitis from intestinal wall perforation, common bile duct obstruction leading to acute obstructive jaundice and upper airway obstruction under anaesthesia.

The main issues with ascariasis patient undergoing surgical procedures under anaesthesia depends on developmental state of *Ascaris*. The larval stage (Loeffler's syndrome) or the adult stage (erratic ascariasis).

Pulmonary ascariasis (Loeffler's syndrome^[8]) is a self-limited disease with transient respiratory symptoms occurring in sensitized hosts during the stage of larval migration through the lungs. This syndrome can be a

response to several parasitic infestations, ascariasis being the commonest aetiology. It is associated with mild symptoms, limited physical signs, eosinophilia (differential count of <10% to >60%), a benign course and spontaneous healing usually within a period of 2–3 weeks. Symptomatic treatment of wheeze and cough with inhaled bronchodilators and systemic corticosteroids may be required. Following symptomatic therapy, standard therapy for intestinal ascariasis can be given after the worms have developed to maturity in the small intestine. Antihelminthic therapy is usually not advocated in a patient with pulmonary symptoms because dying larvae may do more harm than migrating ones.^[7] Diagnosis particularly during the phase of larval migration through the lungs is by peripheral eosinophilia as the eggs may be absent in stool during this phase.

In the adult stage, under the stress of anaesthesia, erratic migration especially in to upper airway and life-threatening complications like airway obstruction during or after extubation, migration into endotracheal tube, respiratory arrest have been reported.^[2-6,8] *Ascaris* seems to be especially sensitive to anaesthetics as it stimulates worms to be hyper mobile.^[9] There are various other factors that predispose these larvae to migrate under the influence of anaesthesia such as horizontal posture of the patient, relaxed cardio-oesophageal sphincter, decreased gastric pH, reduced pepsin and absent swallowing reflex.^[10]

CONCLUSION

This case highlights the importance of deworming in patients presenting for surgery with high eosinophil counts.^[10] Due to the potential problems caused by larva and adult worms, patients who are undergoing elective surgery should be checked for the presence of *Ascaris*, if there is any possible exposure history. Usually a single stool examination will suffice to rule out the infection. Occasionally quantification of worm burden prior to treatment may be necessary as deworming especially with heavy worm burden may cause erratic migration.

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