Aerophagia resulting in acute airway obstruction

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A 67-year-old man was brought by ambulance to the emergency department of the Royal Victoria Hospital after a syncopal episode that occurred while he was grocery shopping. He claimed to have been walking in the grocery store while drinking a carbonated beverage. He stated that a few minutes later he had some difficulty breathing and then remembered awaking in the ambulance. He had no cardiac symptoms, cardiac history, or history of syncopal episodes. He stated, however, that he always had breathing difficulties after drinking carbonated beverages.

He was found to have a long history of schizophrenia but appeared to maintain a high level of functioning. He had been taking many psychotherapeutic medications and was currently taking valproic acid, risperidone, and procyclidine. He did not consume alcohol or use tobacco. He did not report obstipation or emesis. On examination, he was in mild respiratory distress using accessory musculature, and inspiratory stridor was present. He was able to communicate and verbalize adequately and was saturating well on ice-chip nebulizers. He did not exhibit any of the typical tardive orofacial dyskinesia or choreoathetoid movements caused by the prolonged use of neuroleptic medication. He had no evidence that his breathing pattern or the movements of his respiratory muscles were dyskinetic in any way.

Endoscopic examination of the upper aerodigestive tract was performed with a flexible bronchoscope. The supraglottic region demonstrated edema of the arytenoids bilaterally, with minimal mucosal erythema; otherwise, the examination of the larynx was normal. However, it was noted that the patient exhibited aerophagia: on voluntary inspiration the glottis would close, the upper esophageal sphincter would relax, and he could be seen swallowing air; after this, he would gasp, and the rima glottis would open. This was not seen during quiet respiration. Examination of the subglottis revealed normal tracheal cartilaginous architecture. During quiet respiration there was a 70% airway obstruction from the immediate subglottis to the carina by a ballooning posterior tracheal wall (Fig 1), which progressed to a complete obstruction with voluntary inspiration and the Valsalva maneuver (Fig 2). Chest and abdominal plain films demonstrated a massively dilated esophagus and stomach. There was no radiographic indication of bowel obstruction at any level.

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The working diagnosis was chronic aerophagia, exacerbated by carbonated drinks, leading to an acute airway obstruction and syncope. To relieve the obstruction, we counteracted the pressure of the ballooning posterior tracheal wall by placing the patient on continuous positive airway pressure (CPAP) and decompressing the upper gastrointestinal (GI) tract with a nasogastric tube. The patient's stridor and dyspnea almost immediately improved.

Achalasia (and other esophageal motility disorders) and obstructing lesions of the GI tract were considered in this patient. During the subsequent hospitalization, CT scans of the neck and chest and barium swallow with small bowel follow-through redemonstrated a massively dilated esophagus and stomach, without any masses. GI motility studies were also completed and revealed esophageal aperistalsis without evidence of achalasia. A 24-hour Holter monitoring eliminated likely cardiac causes for the syncopal event. The patient's psychiatrist was consulted, and his medications were rearranged in an effort to decrease the number of neuroleptic substances. After several days of CPAP and nasogastric desufflation, the patient's stridor resolved. Repeat bronchoscopy displayed improvement in the airway with less ballooning of the posterior wall; however, the esophagus and stomach remained persistently dilated on subsequent imaging. We were able to wean the patient off of CPAP and remove the nasogastric tube by day 7. He was ultimately discharged on hospital day 30 (extended for social service reasons), with instructions to avoid carbonated drinks.

DISCUSSION

Nearly all the gas in the upper GI tract comes from air that is swallowed, or aerophagia. Aerophagia may be physiologic or pathologic, unconscious or deliberate. Deliberate aerophagia is seen most commonly in mentally ill and retarded persons and is considered to be a maladaptive habit of relaxing the upper esophageal sphincter while inspiring against a closed glottis, forcing a bolus of air into the esophagus. In extreme cases this may cause massive distention of the bowels, leading to an ileus, volvulus, and necrosis. Van der Kolk et al[1] reported on 9 mentally ill patients with the habit of aerophagia who sought treatment for acute abdomen. These 9 patients were successfully treated with percutaneous endoscopic gastrostomy tube insertion for chronic desufflation of the upper GI tract. In our patient, we have reserved the option of percutaneous endoscopic gastrostomy tube placement for the future. Additionally, some centers are using biofeedback in patients with severe aerophagia.[2]

Tardive dyskinesia (TD) and respiratory dyskinesia (RD) are well-described side effects from neuroleptic therapy. A careful review of the literature revealed a multitude of presenting symptoms for RD, including dyspnea, gasping, dysphagia, severe

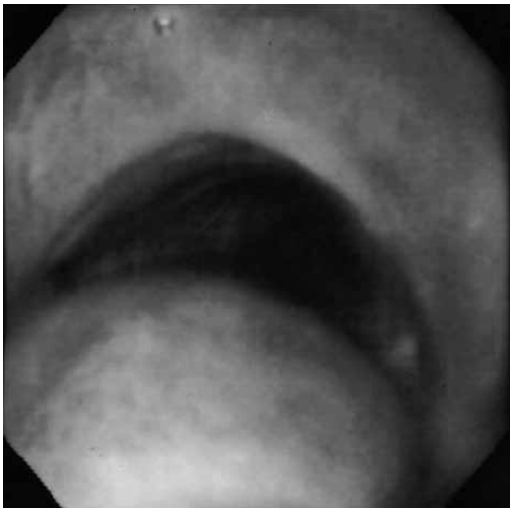

Fig 1. Bronchoscopic view of immediate subglottis demonstrating a ballooning posterior tracheal wall during quiet respiration.

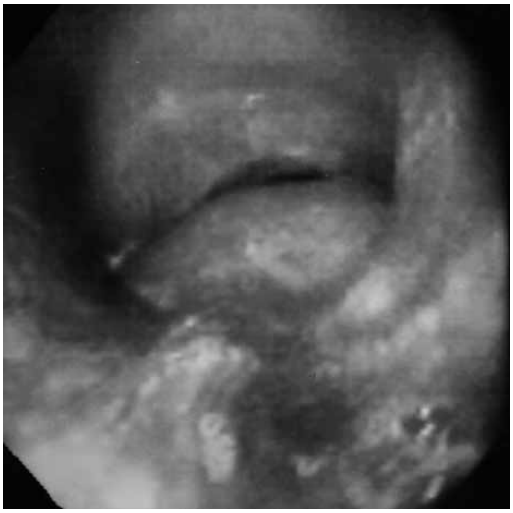

Fig 2. Bronchoscopic view of midtrachea demonstrating a complete obstruction during voluntary respiration and the Valsalva maneuver.

choking when eating, and episodes of aspiration pneumonia. RD occurs almost exclusively in association with other tardive effects of neuroleptic medications.[3] The prevalence of these respiratory irregularities was 7.4% in patients with TD in one large series.[4] It is thought that the neuroleptic medications contribute to aerophagia, with laryngeal dyskinesia being the most clinically salient feature in the case presented. The degree to which laryngeal dyskinesia contributes to the habit of aerophagia is unknown in this patient or in general. Extensive review of the literature failed to locate any account of acute airway obstruction as a manifestation of TD, RD, or aerophagia. This represents the first reported case of aerophagia resulting in acute airway obstruction and should be considered in the differential diagnosis of psychiatric patients with acute airway obstruction.

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