Wireless capsule ~~end~~o bronchoscopy

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Case Presentation

History of Present Illness

A 67 year-old man presents 10 days after swallowing a capsule endoscopy camera that was never retrieved. The wireless capsule was swallowed asymptotically for evaluation of heme positive stools after negative upper and lower endoscopies. Patient noted that the evening after swallowing the camera he developed mild shortness of breath and cough. The cough and shortness of breath were persistent and worsened while lying down and when moving positions. He denied prior issues with swallowing or aspiration.

Review of Systems

Negative other than what is noted above.

PMH, SH, and FH

Past medical history: coronary artery disease, peripheral vascular disease, hyperlipidemia

Surgical history: femoral-popliteal bypass, previous shoulder and back surgery

Social history: 1 pack/day of cigarettes for 50 years, prior alcohol usage but not current, no illicit drugs

Family history: no pulmonary diseases

Physical Exam

Vital signs: temperature 36.7° C, heart rate 86 beats per minute, respiratory rate 15 breaths/min, blood pressure 156/69, and oxygen saturation 97% while breathing room air

Lungs: bilateral wheezing with left greater than right.

Otherwise examination was normal.

Radiography

The admission chest x-ray is shown in figure 1.

Figure 1. Chest x-ray with capsule in left main bronchus (arrow).

A thoracic CT scan is shown in Figure 2.

Figure 2. Thoracic non-contrast CT scan with capsule in left main bronchus (arrow).

Bronchoscopy was performed under general anesthesia using a laryngeal mask airway (LMA). Bronchoscopic examination revealed a white capsule lodged in left main bronchus (Figure 3).

Figure 3. Bronchoscopy with capsule in left main bronchus.

A mesh basket was used to retrieve of the capsule from the left main bronchus, but in the carina the capsule slipped out of the basket. Attempts to use snare and retrieval forceps failed due to the slippery plastic housing covering the capsule. The mesh basket was used again with capture of the capsule. Once the capsule was retrieved, the LMA was removed to avoid en bloc damage to the vocal cord while removing the capsule. The LMA was then reinserted for continued ventilation after the capsule had been obtained.

Figure 2. Intact capsule after removal.

Literature Review

Capsule endoscopy has been available since 2001 and is used for the evaluation of obscure gastrointestinal bleeding and iron deficiency anemia. The retention rate is 1-2%, with capsules typically found in diverticula, hernias, or other bowel abnormalities (1-3). It is reported that approximately 2% of patients will have difficulty or inability to swallow the capsule. Review of 13 available cases of aspiration of wireless endoscopy capsules revealed that about 50% of the time capsules are spontaneously expelled by coughing, and the other half requiring bronchoscopic intervention for removal (Table 1).

Table 1. Summary of cases with aspirated wireless endoscopy capsules.

Case	Difficulty swallowing capsule?	Symptoms	Removal	Age
Schneider (9)	Yes	Cough	Cough	64
Nathan (7)	No	None	Cough	93
Buchmaster (5)	No	Dyspnea with exertion	Flexible bronchoscopy	74
Choi (4)	No	None	Flexible bronchoscopy with net	75
Bredenoord (10)	Yes	Cough	Cough	65
Guy (1)	No	None	Rigid bronchoscopy with basket	90
Depriest (2)	Yes	None	Flexible bronchoscopy with net	90
Ding (6)	Yes	Cough	Bronchoscopy	80
Ding (6)	Yes	Dyspnea	Cough	88
Koulaouzidis (3)	Yes	None	Cough	76
Pezzoli (8)	No	None	Cough	82
Tabib (11)	Yes	Cough	Cough	78
Septher (12)	Yes	Cough	Rigid bronchoscopy with net	67

Risks for aspiration include underlying neurologic disease, elderly patients, and patient with previous difficulties with swallowing. Signs of capsule aspiration vary from asymptomatic to shortness of breath, cough, and tachypnea (1-12).

The capsule is a wireless, 11 mm X 26 mm capsule with a miniature video camera, light emitting diodes, batteries, transmitter, and an antenna. It is slippery, nonbiodegradable, has plastic housing, and weighs less than 4 grams (13).

This case represents a rare, but important complication of wireless capsule endoscopy requiring evaluation and possible intervention. Although this complication is rare, it is likely we will see increasing frequency as capsule utilization increases.

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