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ONLINE CASE REPORT

Migrating Ingested Foreign Body of the Upper Aerodigestive Tract with Resultant Septic Shock

Case report and literature review

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جسم غريب متنقل في الجهاز التنفسي الهضمي العلوي مع حدوث صدمة انتانية

تقرير حالة ومراجعة الأدبيات

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الملخص: هناك ندرة في المضاعفات الناتجة عن ابتلاع جسم غريب ولكن عند حدوث أيا من هذه المضاعفات فإنها تتسم بالخطورة الشديدة. واذا ماتم إغفالة فقد ينتج عنه الوفاة الطارئة.هذا تقرير لحالة اكتشاف جسم غريب بمحض الصدفة وانتقالة إلى الرقبة مع عمل خراج عنقي أدى إلى صدمة انتانية. وقد احتاج المريض إلى دعم استقرار حالته الطبية مع التدخل الجراحي.وقد عادت علامات المريض الحيوية إلى قيمها الطبيعية في اليوم الثاني بعد التدخل الجراحي، وتم خروج المريض في اليوم التالي.

مفتاح الكلمات: جسم غريب متنقل، صدمة انتانية، خراج؛ تقرير حالة؛ الهند.

ABSTRACT: Complications due to foreign body ingestion are rare; however, if present, these can cause significant morbidity to the patient. An overlooked ingested foreign body could present as an emergency and may prove fatal. We present a case of an accidentally ingested foreign body with delayed presentation, which migrated to the neck and produced a cervical abscess presenting as septic shock. The patient required prompt stabilisation followed by surgical intervention. The patient's vital signs returned to normal on the second post-operative day, and he was discharged the following day.

Keywords: Foreign-Body Migration; Septic Shock; Abscess; Case Report; India.

Foreign body ingestion is a common complaint seen by practicing otolaryngologists. It occurs in both adults and children. Children commonly ingest toys and small coins. The most common foreign bodies accidentally ingested by adults are bones, especially fish bones.[1] Complications due to foreign body ingestion are rare, although, if present, can cause significant morbidity and in some cases, mortality.[2] The incidence of cervical abscess formation after foreign body migration in the literature is less than 1%.[3,4] Mortality following oesophageal perforation has been reported to be as high as 32%.[3] Advances in radiological techniques and the endoscopic management of foreign bodies have greatly improved the outcome of such cases; hence, impending complications of foreign body ingestion and cases of prolonged retention of foreign bodies have reduced over a period of years. However, migrating foreign bodies may make it difficult to diagnose the cause of worsening symptoms, especially after noting the absence of a foreign body on endoscopy. Some complications of retained and migrating foreign bodies include oesophageal perforation, mediastinitis, vascular complications, various cervical abscesses and recurrent cervical infections.[1,5,6] In our case, the patient's consent was obtained for publication.

Case Report

A 58-year-old man with no comorbidities presented to the emergency triage of Kasturba Hospital, Manipal, with his chief complaint being a swelling

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Figure 1: X-ray of the neck (anterposterior and lateral views) showing the foreign body in the deep cervical space.

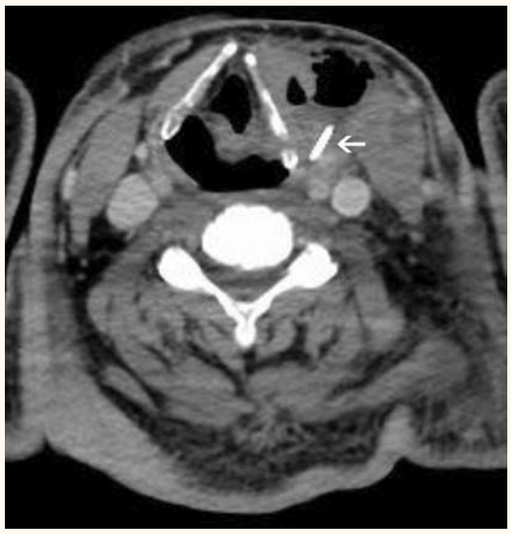

Figure 2: Computed tomography axial scan showing the foreign body in the neck on the left side in close proximity to the carotid arteries (white arrow).

on the left side of the neck associated with pain for the previous 4 days. He claimed that a few days previously he had felt a pricking sensation in the throat upon having a vegetarian meal and said that he had probably swallowed a toothpick. Pain and swelling followed this incident. As the pain increased in intensity and the swelling increased in size, he visited a local physician who performed an ultrasound of the neck which suggested a neck abscess. He also underwent an upper gastrointestinal (GI) endoscopy at that centre which revealed no foreign body. In the meantime, he developed a fever and became ill, at which time he was referred to our centre.

On examination, the patient was ill, but conscious and coherent. His pulse was 110 beats per/min, reduced in volume and feeble. Blood pressure was 80/60 mmHg in a right arm supine position. Respiratory rate was 22 breaths per/min and his temperature was 37 °C (99.5 °F). His extremities were cold and the oral mucosa was moist. The patient had no difficulty breathing and did not experience a change of voice. He only complained of pain around the area of swelling in the neck. On examination, a diffuse swelling approximately 3 x 3 cm was seen in the left side of the neck, in the region of the lower one-third of the left sternocleidomastoid muscle (SCM) over the anterior aspect of the neck. The skin over the area of swelling appeared normal and there were no scars or sinuses present. On palpation, there was tenderness over the swelling and a local rise of temperature. The skin over the swelling was pinchable. The inspection findings were confirmed. No other swellings were seen in the neck.

The patient was admitted and routine blood investigations were performed. The patient's total white blood cell count was high and the differential count was high in neutrophils. Serum creatinine level was 1.7 mg/dl, and a blood culture was ordered. X-rays of the neck (both an anteroposterior and lateral view) were done, showing a foreign body in the region of the lateral pharyngeal space on the left at the C5 level [Figure 1]. A computed tomography (CT) scan of the neck with contrast was ordered. As he required intravenous contrast, the hydration protocol was followed. Oral fluids were withheld and intravenous antibiotics along with parenteral hydration were started. A dopamine infusion (400 mg in 50 ml normal saline) at a rate of 4 ml/hr was begun. Meanwhile, an emergency CT of the neck with contrast was obtained.

The CT scan indicated a linear foreign body measuring approximately 5 cm extending antero-inferiorly in the deep cervical space close to the carotid space on the left side. The distance between the foreign body and the left common carotid artery was around 6 mm [Figure 2]. A heterogeneously non-enhancing hypodense area with air pockets suggestive of an abscess was seen in the left visceral

Figure 3: Computed tomography coronal scan showing a neck abscess with air pockets on the left side (white arrow). The foreign body is partly seen.

space of the neck [Figure 3] extending from the hyoid bone to the region of the pyriform sinus. It was seen involving the strap muscles and SCM. Posteriorly, it reached the carotid space and inferiorly it extended to the thyroid gland.

The patient was taken for emergency neck exploration under general anaesthesia. Incision and drainage of the abscess was done. Pus was evacuated and sent for culture and sensitivity. The foreign body was discovered in the neck abutting the left carotid artery. It was retrieved and found to be a 5.5 cm sewing needle [Figure 4]. The wound was washed thoroughly. A corrugated rubber drain was placed in the wound and secured and a nasogastric tube was passed and secured. The wound was dressed, and the patient was moved to recovery and kept overnight for close monitoring. Feeds were administered through the nasogastric tube. A blood culture was positive for methicillin-sensitive *Staphylococcus aureus* after 48 hours of incubation. The patient's vital signs returned to normal on the second post-operative day. The nasogastric tube and drain were removed on the third post-operative day, and the patient was discharged thereafter. An intraoperative endoscopy was not performed as the CT scan did not show a luminal foreign body.

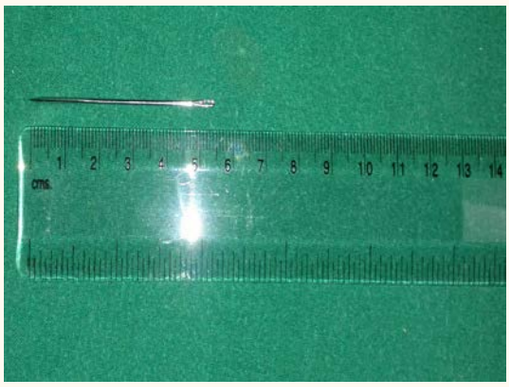

Figure 4: The foreign body (a 5.5 cm sewing needle) retrieved from the neck.

Discussion

Migrating ingested foreign bodies cause significant morbidity. More often than not, cases of fish or chicken bone ingestion present to the otolaryngologist with sudden pharyngeal pain. Other commonly ingested items include pins, coins and button batteries. It is possible that the sharp end of a foreign body such as bone inflicts mucosal injury on its way down, causing pain and anxiety to the patient. It may not be seen on flexible endoscopy or rigid angled telescopy of the larynx performed in the outpatient department. Many such foreign bodies pass without alarm and the pain subsides over a day or two. However, if the pain persists or the patient develops respiratory compromise, haemoptysis, neck swelling or a fever, a second look may be necessary. Diagnosis is more difficult in children and infants as compared to adults on account of their inability to provide an accurate history.[6]

The incidence of neck abscesses following foreign body ingestion has been assessed to be around 0.21% and 0.96% in two separate studies.[3,4] Lai *et al*. studied 29 cases of foreign body ingestion followed by complications to assess the risk factors which predict the occurrence of the latter.[7] They included age, delayed presentation, comorbidities, cricopharyngeal impaction and radiographic identification. A case series demonstrated that oesophageal perforation may occur within 24 hours of ingestion whereas neck abscesses following ingestion may present after 4 or more days.[3] Therefore, the absence of an ingested foreign body on examination does not necessarily exclude the possibility of impending complications.

The most common site at which a foreign body could perforate the oesophagus to become extraluminal is at the cricopharynx, which is the narrowest part of the oesophagus.[3] It has also been suggested that its orientation (horizontal with respect to the oesophageal lumen) along with strong muscular contractions at the cricopharynx facilitate perforation and extraluminal migration.[8] In our case, this could have been the cause of migration as a horizontally-placed sewing needle could easily perforate the cricopharnyx. Certain clues such as mucosal laceration or oedema seen during rigid endoscopy may suggest extraluminal migration at that site.[9]

Loh et al. studied 273 cases of foreign bodies in the oesophagus.[10] They reported a major complication rate of 7.3% in their study. According to them, foreign body impaction increases the risk of perforation 14 times. The most common clinical features of neck abscess following migrating ingested foreign body are fever, sore throat, *odynophagia* and leucocytosis.[3] Case reports have described a fish bone and also a tooth which lodged in the lobe of the thyroid gland.[9,11] Yadav *et al.* published a case in which an ingested foreign body burst through a neck swelling externally.[12] Other authors have described the development of a thyroid abscess and thyroid gland cutaneous fistula due to a migrating foreign body.[13,14] Joshi *et al.* described a case of foreign body ingestion which pierced the internal jugular vein.[15] Other case reports describe the migration of ingested foreign bodies to present as a mediastinal mass or a pulmonary mass, and another case report describes a patient who experienced cardiac tamponade due to a migrating foreign body.[16–18] A rare case of the migration of a wooden toothpick into the liver, causing a pyogenic liver abscess has also been reported. However, this type of migration occurred through the anterior stomach wall.[19]

Button batteries, usually ingested by infants and young children, can cause significant damage, such as oedema and ulceration at the region of foreign body impaction due to strong alkali leakage, possibly resulting in oesophageal perforation, pneumothorax or spondylodiscitis.[20] Other complications include periesophagitis, periesophageal abscess, mediastinitis, and upper GI haemmorhage.[1,12,21] The most feared complications include aorto-oesophageal, subclavian-oesophageal fistula and carotid rupture.[10,15,17]

Upon encountering a case of migrating foreign body with the development of other complications such as neck swelling, respiratory embarrassment, fever, chest pain or haemoptysis, a CT scan can help to identify the site and relationship of the foreign body in the neck, which is often missed by neck radiographs.[22] Studies have shown that a CT scan is highly accurate and has a high positive predictive value compared to a plain X-ray of the neck. However, a plain radiograph is the first-line investigation and a positive finding is enough to warrant an upper GI endoscopy, especially if an extraluminal foreign body is suspected. Magnetic resonance imaging (MRI) has also proven effective in diagnosing non-metallic migrated foreign bodies missed by a prior CT scan, but is contraindicated in suspected metallic foreign body ingestion. Some authors have suggested using an intraoperative ultrasound to identify the location of a migrated foreign body in the neck.[1] Radiological features include the presence of a foreign body, free gas on a CT scan and air fluid levels on a lateral view of an X-ray of the neck.[3] A contrast CT scan can be done if a vascular complication is suspected. The relation of the foreign body to the great vessels of the neck and chest should be studied prior to surgical exploration. A cervical abscess due to a migrated foreign body can be managed by draining the abscess, retrieving the foreign body and administering intravenous antibiotics along with nasogastric feedings. This treatment is sufficient in most cases.

Conclusion

The inability to identify an ingested foreign body on clinical examination and endoscopy does not rule out its presence. The persistence of symptoms and the onset of ominous signs must direct the otolaryngologist to the possibility of a migrating foreign body. Such cases could be easily mismanaged, wherein the physician might assume that the foreign body has passed to the stomach and therefore treat the patient conservatively, which could prove fatal. A high index of suspicion is necessary to rule out an overlooked foreign body. A CT scan of the neck is necessary to locate the same. We report this case because the patient presented with septic shock, which is an unusual presentation.

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