CASE REPORT

Unusual cause of upper gastrointestinal bleed, when OGD could be fatal

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SUMMARY

A 57-year-old man presented with chest pain, dyspnoea and coffee grounds emesis. He was haemodynamically stable without significant drop in haemoglobin. He suddenly developed cardiac arrest with wide complex tachycardia and became comatose. CT scan of the head revealed pneumocephalus and multiple infarcts. Given the recent history of radiofrequency ablation for atrial fibrillation, atrio-oesophageal fistula (AOF) was suspected. CT angiography of the thorax showed a 5 mm diverticulum on the posterior wall of the left atrium, also raising suspicion for AOF. The patient was taken to the operating room. An AOF was found and repaired. He did not have any further gastrointestinal bleeding. There was no neurological recovery at day 11 and life support was withdrawn per his family's request. This case highlights the importance of obtaining history of recent cardiac procedures in patients presenting with an upper gastrointestinal bleed. An oesophagogastrroduodenoscopy in this patient could have been instantaneously deadly.

BACKGROUND

Upper gastrointestinal bleeding can be caused by a variety of different aetiologies. Oesophagogastrroduodenoscopy (OGD) is the current standard of care in the management of upper gastrointestinal bleeding. However, if an OGD is performed in the setting of an atrio-oesophageal fistula (AOF), it would not only be ineffective in controlling bleeding, it could also result in an air embolism. Although AOF is a rare complication of radiofrequency ablation (RFA) used for atrial fibrillation, these procedures are being performed more often in the present day. It is quite possible that clinicians will encounter such a patient at some point in their career. A high degree of suspicion is required in diagnosing AOF after recent cardiac procedures, and it must be considered in patients presenting with upper gastrointestinal bleeding with multisystem involvement including in those who have had an air embolism and recent cardiac ablation procedures.

CASE PRESENTATION

A 57-year-old man with history of hypertension, dyslipidaemia, obstructive sleep apnoea and atrial fibrillation, on rivaroxaban (a direct factor Xa inhibitor), presented to an outside hospital with sudden onset of chest pain, dyspnoea on exertion and one episode of coffee grounds emesis. He was haemodynamically stable on admission with a normal complete blood count (CBC) and basic metabolic profile. Haemoglobin was 13.5 g/dL. He

suddenly experienced an episode of severe chest pain and became unresponsive. He developed wide complex tachycardia and advanced cardiac life support (ACLS) protocol was undertaken. After stabilisation, nasogastric aspiration revealed 300 mL of bright red blood. The patient was transferred to our institution.

On arrival, the patient was unresponsive, with stable vital signs.

INVESTIGATIONS

Emergent CT of the head revealed pneumocephalus and multiple cerebral infarcts. Repeat haemoglobin was 14.2 g/dL. Gastric lavage cleared after irrigation. An OGD was deferred given the haemodynamic stability, concerns for the primary cardiac aetiology of the arrest and the new neurological findings. Meanwhile, the patient's blood cultures were positive for *Staphylococcus aureus* and *Streptococcus viridians*. He was placed on broad-spectrum antibiotics: cefepime, gentamicin, vancomycin and fluconazole. On further discussion, his wife revealed that the patient had RFA for atrial fibrillation 18 days earlier. She also reported that he was having transient focal neurological symptoms for the past 2 days. The symptoms included dysarthria, weakness in the right upper extremity and dizziness. Given the recent RFA ablation, air embolism findings and poly-microbial bacteraemia, a left atrial-oesophageal fistula was suspected.

CT angiography of thorax was performed, which revealed a 5 mm posterior left atrial diverticulum, raising the suspicion of pseudoaneurysm or atrial-oesophageal fistula (figures 1 and 2).

Figure 1 CT scan sagittal section depicting a posterior left atrial diverticulum consistent with atrial-oesophageal fistula.

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Figure 2 CT scan axial section depicting a posterior left atrial diverticulum consistent with atrial-oesophageal fistula.

TREATMENT

The patient underwent emergent right thoracotomy with repair of the left atrial to oesophageal fistula with intercostal muscle flap. He had no further gastrointestinal bleeding symptoms. However, there was no improvement in his neurological status. His course was further complicated by septic emboli to the liver, kidneys and spleen. According to the family's wishes, ventilator support was withdrawn after 11 days.

DISCUSSION

AOF is a rare complication of atrial fibrillation catheter ablation procedures with an incidence of 0.2%. However, the AOF mortality rate is 70–80%. It can present 1–6 weeks after the ablation procedure, with a median time of 2 weeks.¹ Its presentation is non-specific, but the majority of patients will have fluctuating neurological deficits (69%), fever (75%) and chest pain.² Patients may develop sepsis and polymicrobial bacteraemia. Typically, fever is an early sign, and neurological deficits develop later and indicate an advanced form. Haematemesis is rarely seen in patients with AOF. If a patient is suspected to have AOF, OGD and other invasive oesophageal procedures are an absolute contraindication. Air insufflation can cause fatal air embolism.^{2–3} Although our patient did not have OGD, positive pressure ventilation during resuscitative effort could explain the air embolism leading to pneumocephalus.

Development of an AOF after RFA is secondary to thermal and ischaemic injury. The oesophagus and the left atrium are in close proximity. Autopsy studies have revealed that the

oesophagus is 5 mm from the left atrium.⁴ The diagnosis of AOF can be performed with CT/MRI of the chest. A variety of different methods are employed during RFA to reduce the risk of thermal injury to the oesophagus, including high-dose proton-pump inhibitor therapy and use of oesophageal temperature probes to monitor temperature during the RFA.^{2–4–5}

AOF should always be on the differential diagnoses of upper gastrointestinal bleeding in the appropriate setting. An unexplained fever and neurological deficits after a recent ablation procedure are clinical clues. Given the rarity of the AOF, a high degree of suspicion is needed to make the diagnosis. If diagnosed early, surgical repair can be lifesaving.

Learning points

- ▶ This case underlines the importance of obtaining detailed surgical and medical history in patients with upper gastrointestinal bleed.
- ▶ Atrio-oesophageal fistula (AOF) presentation can be very non-specific, so a high degree of suspicion is required to make a diagnosis.
- ▶ Oesophagogastroduodenoscopy in the setting of AOF could be fatal.
- ▶ Timely surgical repair can be lifesaving.

Contributors RK and RM were involved in the care of the patient. All the authors were involved in the writing and review of the manuscript.

Competing interests None declared.

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