

## CASE REPORT

## Dysphagia, dysphonia and sore throat following cerebral infarction: an unexpected cause

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**SUMMARY**

A 75-year-old woman presented with left-sided weakness. There was no speech disturbance or reported swallowing difficulties. CT of the head revealed infarction in the territory of the right middle cerebral artery. The patient was transferred to the acute stroke unit and a nasogastric tube was placed following a failed swallow screening test. The following day, on assessment, there was considerable pain on swallowing. The tone and quality of the patient's voice had deteriorated and there was significant dysphagia. Seven days later a plastic item, later identified as the patient's denture, was expectorated. Following this, the dysphagia, dysphonia and sore throat rapidly resolved. The case highlights the importance of considering foreign body in the differential, and oral cavity examination in the assessment of a patient with dysphagia and sore throat is essential.

**BACKGROUND**

Symptoms of dysphagia, dysphonia and sore throat that develop following stroke could be due to a number of causes. We present a case of new acute symptoms that developed 2 days after cerebral infarction. The differential diagnosis for new symptoms following cerebral infarction should include neurological causes (such as further infarction or haemorrhagic transformation) and general medical causes (such as hypoglycaemia, sepsis and hypotension). Local structural causes may not be considered initially, as in this case, but should be part of a broader differential diagnosis.

In this instance, the symptoms were due to a reversible cause, and once the item had been removed there was rapid recovery from dysphagia, dysphonia and sore throat. It is important to remember foreign body as a cause for symptoms such as dysphagia, dysphonia and sore throat, and the oral cavity should be examined for any missing teeth or dentures when investigating for the cause. Foreign bodies could have potentially life-threatening consequences such as haemorrhage and airway obstruction, and should therefore be identified or excluded early.

**CASE PRESENTATION**

A 75-year-old woman presented to the emergency department with left-sided weakness. She had woken from sleep and noticed that she was unable to use her left arm or stand due to weakness of the left leg. There was no speech disturbance, change in voice or difficulty swallowing. She has a medical history of previous myocardial infarction and hypertension. She was a smoker of 50 g of tobacco

a week since the age of 17. Examination revealed left-sided facial weakness in an upper motor neurone pattern, and left arm and leg weakness. CT of the head revealed infarction in the right middle cerebral artery territory. The patient was treated with aspirin and transferred to the acute stroke unit. A swallow screen was performed and failed. A nasogastric tube was therefore inserted for the administration of medications and to establish early nutritional support.

The following day, the patient reported pain in her throat. She was assessed by the speech and language therapist, who found that swallowing was triggered by trials with thin and thickened water but during these trials there was a symptomatic pharyngeal residue that was incompletely cleared. Cough was weak and ineffective. Significant pain was noted during the assessment. A change in tone and quality of voice was also noted by the patient. The volume of the patient's voice was much lower than previously and she was unable to raise her voice. Her pitch was also much lower and there was a pronounced hoarseness. These symptoms had developed since the insertion of the nasogastric tube. Pain was attributed to trauma caused by placement of the nasogastric tube, and regular analgesia was started. Dysphagia was assessed to be as a result of significant cerebral infarction and swallowing exercises were provided.

Six days later, the patient was noted to be managing dry swallows well. She was started on trials of small amounts of thickened water. The next day, after several sips of thickened fluid had been successfully swallowed, the patient expectorated a plastic item. This transpired to be a denture and prosthetic tooth (figure 1) that the patient had previously been wearing. The patient was not aware that the dental prosthesis had been dislodged and was surprised to identify the item as she expectorated it. On review of a chest radiograph performed to identify the position of the nasogastric tube the denture could not be identified.

**OUTCOME AND FOLLOW-UP**

Following the expectoration of the denture, the patient's swallowing recovered quickly over the next few days. She was able to swallow more than 100 mL of fluid and a whole yogurt pot without adverse signs of aspiration, fatigue or pain. She noticed that her voice quality had returned to normal. This was also noted by the speech therapist. The patient was able to progress to a full pureed diet immediately, and over the next few days progressed to a normal diet. Her pain resolved



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**Figure 1** The patient's partial denture.

and she no longer required analgesia regularly. She was unaware that she had lost a denture prior to expectorating the item and even with the benefit of hindsight could not recall when she had inadvertently swallowed the denture.

#### DISCUSSION

The differential diagnosis for new symptoms following stroke should include neurological causes (such as further infarction or haemorrhagic transformation) and general medical causes (such as hypoglycaemia, sepsis and hypotension). Local structural causes, such as foreign body in the case of dysphagia, dysphonia or sore throat, should also be part of a broader differential diagnosis. In this instance, the symptoms were due to reversible causes, and once the item had been removed, recovery rapidly ensued.

Thorough examination of the oral cavity, including assessing for any missing dentures, is important when searching for a cause of dysphagia, dysphonia or sore throat. The patient may not be aware that a denture or tooth has been dislodged, as in this case, making the identification of this more difficult. Dentures are also often radio-lucent and as such may not be identified on plain radiographs, adding to the diagnostic problem. Investigations such as nasoendoscopy or endoscopy should be considered. Early recognition of displaced dentures is important, as swallowing of dentures can be potentially life-threatening due to vascular erosion, haemorrhage, pharyngeal or oesophageal tear or perforation and potential to cause airway obstruction.

A similar case has been reported of a patient reporting of neck pain who had dysphagia and speech problems following

cerebral infarction. In that case, the denture was identified after video fluoroscopy. Recovery was rapid after the denture had been removed via rigid endoscopy.<sup>1</sup> The finding of swallowed dentures or a partial denture is more common in the paediatric population or in those with cognitive impairment. We have identified another previously reported case of unexpected swallowing of dentures in an adult patient with no cognitive difficulties. In this instance symptoms were present for 7 days before the partial denture was removed. The removal of the denture required rigid endoscopy. On the removal of the denture symptoms also recovered rapidly.<sup>2</sup>

In conclusion dysphagia, dysphonia and sore throat can be caused by accidental swallowing of dentures or partial dentures. Once identified and the foreign body is removed, recovery can be rapid. Early recognition by assessment of the oral cavity for missing dentures is essential to identify displaced dental prosthesis and prevent potentially life-threatening complications.

#### Learning points

- ▶ New symptoms following stroke can be brought about by a broad differential of causes, including those of local structural origin. Considerable pain on swallowing is not a typical feature of stroke-related dysphagia and therefore the presence of pain should prompt further investigation, such as endoscopy.
- ▶ Once a foreign body causing dysphagia, dysphonia and sore throat has been removed, recovery of symptoms can be rapid.
- ▶ The identification of a displaced denture can be difficult, as the patient may not be aware that the dental prosthesis has been dislodged; and as dentures are mainly radio-lucent they are often not identified on plain radiographs. The oral cavity should therefore be examined, including observation for any missing teeth or dentures, in patients who present with dysphagia or report pain in the throat.

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