Repeated loss of consciousness as the first symptom of recurrence of head and neck malignancy: a case report

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Received 1 May 2020; first decision 2 June 2020; accepted 26 October 2020

Background

Head and neck malignancies rarely cause reflex syncope. Three mechanistic patterns of reflex syncope are known in such patients: carotid sinus syndrome, glossopharyngeal neuralgia syndrome, and parapharyngeal space lesions syncope syndrome. There are few reports describing parapharyngeal space lesions syncope syndrome.

Case summary

A 61-year-old man with a history of head and neck cancer underwent left lingual resection and left anterior cervical lymph node dissection followed by chemoradiotherapy. Two months later, he experienced his first syncope and was admitted to our hospital for further investigation. During the first few days in the hospital, he experienced loss of consciousness. Carotid artery massage and cervical rotation-extension examinations revealed no abnormalities, and glossopharyngeal neuralgia was not observed. Cervical computed tomography showed recurrence of tongue cancer infiltrating the parapharyngeal space. Consequently, the patient had sinus pause during the loss of consciousness; hence, we suspected parapharyngeal space lesions syncope syndrome. Pacemaker implantation was considered but could not be performed as the patient passed away because of the original malignancy.

Discussion

Parapharyngeal space tumours are often characterized by the absence of subjective symptoms, although symptoms such as neck swelling and discomfort in the throat have been reported. Parapharyngeal space lesions syncope syndrome is caused by tumour invasion into the parapharyngeal space, and there is no known trigger for syncope. Our case is unique because the patient’s first symptom of recurrence of tongue cancer infiltrating the parapharyngeal space was repeated loss of consciousness.

Keywords

Syncope • Head and neck malignancy • Parapharyngeal space tumours • Computed tomography • Loss of consciousness • Case report

Learning points

• Three mechanistic patterns of reflex syncope are explored: carotid sinus syndrome, glossopharyngeal neuralgia syndrome, and parapharyngeal space lesions syncope syndrome.
• Mixed neuroregulatory syncope is an indication for pacemaker implantation in case of recurring syncope.
• The present case denotes the importance of differential diagnosis in patients with syncope, especially after cervical surgery.
Introduction

Reflex syncope is the most common group of disorders causing syncope. These disorders result from reflex-mediated modifications in the vascular tone or heart rate; they are characterized by a sudden failure of the autonomic nervous system to maintain blood pressure, and sometimes heart rate, at a sufficient level to ensure cerebral perfusion and consciousness. Head and neck malignancies rarely cause reflex syncope. Three mechanistic patterns of reflex syncope are known in such patients: carotid sinus syndrome, glossopharyngeal neuralgia syndrome, and parapharyngeal space lesions syncope syndrome. There are few reports describing parapharyngeal space lesions syncope syndrome. The signs and symptoms of parapharyngeal space tumours are subtle. These are usually diagnosed only when they become sufficiently large to be detected. Parapharyngeal space tumours are often detected on follow-up computed tomography (CT) or magnetic resonance imaging (MRI). Herein, we present a unique case in which the patient experienced repeated loss of consciousness as the first symptom of recurrence of a tongue cancer infiltrating the para-nasopharyngeal space.

Timeline

| Timeline                                      |
|----------------------------------------------|
| July 2017: Left tongue cancer (left hemi-glossectomy) |
| December 2017: Left cervical lymph node metastasis (neoadjuvant chemotherapy) |
| March 2018: Left radical neck lymph node dissection, postoperative radiotherapy, adjuvant chemotherapy |
| June 2018: Repeated loss of consciousness     |
| July 2018: Recurrence of tongue cancer infiltrating the para-nasopharyngeal space |

Case presentation

A 61-year-old man with a history of head and neck cancer underwent left lingual resection and left anterior cervical lymph node dissection followed by chemoradiation therapy. He has no history of syncope before cancer. Two months later, he was transferred to our hospital with loss of consciousness. Head MRI did not show any signs of cerebral infarction or tumour brain metastasis. Electroencephalograph findings were normal, and epilepsy was thoroughly ruled out from situation of syncope and neurological findings. The transthoracic echocardiogram was normal and did not reveal any evidence of structural heart disease. He was hospitalized, and he experienced hypotension and sinus bradycardia (Figure 1) resulting in the disturbance of consciousness for ~30 min after walking and urination. Syncope occurred without premonitory symptoms, and it lasted long, which is not typical of vasovagal syncope or situational syncope. Sinus bradycardia continued ~20 min after sinus arrest, and blood pressure lowered as well, causing loss of consciousness (Figure 1). His consciousness recovered as the heart rate and blood pressure recovered. Shellong test performed to screen for orthostatic hypotension showed normal blood pressure reaction on orthostasis. There was no oral medication (beta-blockers, Ca channel blockers, and others) that induced bradycardia in this patient. Considering his previous head and neck cancer, the three potential causes of syncope were investigated: carotid sinus syndrome, glossopharyngeal neuralgia syndrome, and parapharyngeal space lesions syncope syndrome. Carotid artery massage and cervical rotation-extension examinations revealed no abnormalities, and glossopharyngeal neuralgia was not observed. Therefore, parapharyngeal space lesions syncope syndrome was suspected. Cervical CT revealed the recurrence of a tongue cancer infiltrating the para-nasopharyngeal space (Figure 2).

Mixed neuroregulatory syncope is an indication for pacemaker implantation in case of recurring syncope according to the latest ESC guidelines and in the Japanese circulation society guideline. However, pacemaker implantation must be carefully considered because it entails risks of complications and requires informed consent. We were unable to implant even the temporary pacemaker, although we provided sufficient explanation to the patient and to his family; no further invasive treatment was desired. The patient died because of the original disease 3 months after the aforementioned hospital admission.

Discussion

The current case is a 61-year-old man experiencing syncope as the first symptom of a head and neck malignancy recurrence invading the parapharyngeal space lesion. The malignancy recurrence was diagnosed as the patient showed sinus bradycardia with a relatively long duration without preceding symptoms. This is atypical for carotid sinus syndrome, glossopharyngeal neuralgia syndrome, thus, suspecting parapharyngeal space lesions syncope syndrome.

Malignancy-related reflex syncope is rare. In a case series reporting 4500 patients with head and neck cancer, the estimated prevalence
of syncope was only 0.4%. The mechanism of syncope in head and neck malignancy involves afferent nerve fibres of the glossopharyngeal nerve. It reaches the vagal cardiac branch and sympathetic nerves via the bulbar nucleus and causes the loss of consciousness due to infiltration into these sympathetic nerves. Three patterns of syncope were explored in this context: carotid sinus syndrome, glossopharyngeal neuralgia syndrome, and parapharyngeal space lesions syncope syndrome. Cervical motion is one of the potential causes of carotid sinus syndrome, and in many cases, the duration of loss of consciousness is short. Glossopharyngeal neuralgia syndrome is caused by tumour invasion directly into the sensory branch of the glossopharyngeal nerve. Patients usually have acute unilateral head or neck pain prior to syncopal attacks. Parapharyngeal space lesions syncope syndrome is caused by tumour invasion into the parapharyngeal space, and there is no known trigger for syncope. In the present case, we diagnosed the cause of the syncope as parapharyngeal space lesions syncope syndrome because carotid sinus massage revealed no abnormalities, there was no pain prior to syncopal attacks, and cervical CT revealed a tumour infiltrating the parapharyngeal space with no typical trigger for syncope.

Parapharyngeal space tumour is relatively rare, occurring in about 0.5% of head and neck malignancies. Parapharyngeal space tumours are often characterized by the absence of subjective symptoms, although symptoms such as neck swelling and discomfort in the throat.
have been reported. Furthermore, there have been few reports on the occurrence of syncope due to parapharyngeal space tumours, and the frequency has not been clarified. Usually, parapharyngeal space tumours are found on follow-up CT or MR imaging.

There is no universally effective treatment for patients with syncope caused by head and neck malignancies. Treatments investigated previously include vasoconstrictive drugs, cardiac pacemakers, radiotherapy, and surgical resection of the glossopharyngeal nerve. Pacemaker therapy may relieve syncope resulting from a cardioinhibitory reflex with bradycardia. However, pacing will not lessen syncope if a pure vasodepressor syncope develops. In carotid sinus syndrome, radiotherapy is effective for head and neck malignancy.

The current patient was diagnosed with parapharyngeal space lesions syncope syndrome, and it involved the recurrence of tongue cancer, which had metastasized. Unfortunately, his general condition deteriorated, and he died. The present case denotes the importance of differential diagnosis in patients with syncope, especially after cervical surgery.

Lead author biography

Sayaka Funabashi graduated from Kyorin University and received the MD degree in 2011. She was working as a Cardiology senior resident at the Kyorin University hospital from 2013. Then, she became a cardiovascular resident at Department of Cardiovascular Medicine, National Cerebral and Cardiovascular Center, Japan from 2016. From 2019, she has worked as a cardiovascular fellow at Department of Cardiovascular Medicine, National Cerebral and Cardiovascular Center, Japan.

Supplementary material

Supplementary material is available at European Heart Journal - Case Reports online.

Slide sets: A fully edited slide set detailing this case and suitable for local presentation is available online as Supplementary data.

Consent: The authors confirm that written consent for submission and publication of this case report including image(s) and associated text has been obtained from the patient in line with COPE guidance.

Conflict of interest: none declared.

Funding: none declared.

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