



Vasodepressor Syncope and Recurrent Carcinoma of Pharynx: A Sign of Malignant Recurrence

Mudassar Baig^{1*} and Richard Bruce Irwin¹

¹Department of Cardiology, Fairfield Hospital Bury, Lancashire, UK.

Authors' contributions

This work was carried out in collaboration between both authors. Author MB is the Primary author written the case and literature review. While author RBI is senior author who reviewed and made corrections/suggestions. Both authors read and approved the final manuscript.

Case Study

Received 16th July 2013
Accepted 7th September 2013
Published 30th September 2013

ABSTRACT

We present the case of a 66-year-old man under surveillance for oropharyngeal malignancy. The presentation was that of recent onset recurrent syncopal attacks associated with neck pain. Both bradycardia and hypotension were seen during the syncopal events. Although recurrence of malignancy had not been proven at the time of presentation, this was subsequently confirmed. In this case syncope was successfully managed with Midodrine, and permanent pacemaker implantation was avoided. A review of the literature identified similar cases, where the presumptive mechanism for syncope is mediated via the glossopharyngeal nerve. Such cases follow a similar clinical course, with an unpredictable response to standard therapies, including pacemaker implantation. Clinicians should be aware that syncope associated with head and neck cancer may herald recurrence of malignancy.

Keywords: Vasodepressor syncope; carcinoma of pharynx; neck malignancy

1. CASE REPORT

A 66 year old gentleman presented to our institution with a two week history of episodic right sided neck pain radiating to right side of the head, and associated dizziness. He had

*Corresponding author: Email:mudassarbaig@hotmail.com;

experienced multiple episodes of loss of consciousness lasting from a few seconds to few minutes. These episodes were associated with a brief prodrome of feeling faint, and were typified by rapid recovery and no physical injuries. His admission to hospital was prompted by a typical syncope.

Past medical history included a diagnosis of squamous cell carcinoma of the right oropharynx made 15 months ago; treatment had been with chemotherapy and radiotherapy. He was receiving regular surveillance for this malignancy, and magnetic resonance imaging 3 months prior to presentation had suggested possible recurrence. Biopsy of right side of the tongue had not confirmed any recurrence however; this could not be fully excluded due to extensive induration and inflammation at the biopsy site.

There was no personal history of cardiovascular disease, no prior history of syncopal attacks, and he was not taking any medication known to cause bradycardia or hypotension.

Initial examination by the paramedic ambulance crew revealed a heart rate of 67bpm and a blood pressure (BP) of 60/40. On arrival to hospital, heart rate had increased to 90bpm, and BP to (91/56mmHg). Examination was otherwise unremarkable. Baseline hematological and biochemical investigations were normal including thyroid function tests. ECG revealed sinus bradycardia (heart rate 37bpm) and first-degree heart block.

In view of the improvement in haemodynamic parameters, the patient was managed with analgesics and monitored with ECG telemetry. Dexamethasone was instigated to cover the possibility of localized oedema compressing the carotid sinus. Subsequent assessment by an ear nose and throat (ENT) specialist did not suggest carotid artery/sinus involvement contributing to syncope, and the Dexamethasone was discontinued. After 4 days of unremarkable observation the patient was discharged. Further outpatient ambulatory ECG monitoring was planned to ascertain the need for permanent pacing.

Unfortunately the patient was readmitted within 48hrs with a further presyncopal attack. This episode seemed related to posture. Lying and standing blood pressure checks revealed a postural drop of 30mmHg. A repeat MRI of the neck revealed high signal in the floor of the mouth, medial pterygoid area and right side of the skull base, most likely due to previous radiotherapy but tumor recurrence could not be ruled out.

A Tilt table test with carotid sinus massage revealed a predominantly vasodepressor response with BP drop of 24mmHg but no significant bradycardia or asystole. He was treated with the Fludrocortisone and the alpha adrenergic agonist Midodrine with good response, allowing discharge home.

The case was subsequently discussed at our cardiology multi-disciplinary team (MDT) meeting. The consensus decision was to re-evaluate the need for permanent pacemaker implantation if continued symptoms. However, the patient remained asymptomatic at follow-up.

Fine needle aspiration (FNA) of right posterior base of the tongue was later performed that revealed recurrence of squamous cell carcinoma. Tumor re-irradiation was as an option but as patient already had full course of chemotherapy & radiotherapy, and it was not possible to surgically clear the disease, palliative treatment was the only option.

2. DISCUSSION

Syncope is a well-documented complication of the head and neck malignancy [1,2] with an estimated incidence of less than one in 250 patients [1]. Syncope in head & neck malignancy is similar to carotid sinus syndrome (CSS) with important differences (Box 1).

- Symptoms are more severe and frequent [3,4]
- A more profound vasodepressor element is typical [3,4]
- Varying degree of bradycardia but no prolonged asystolic pauses [3,4]
- Absence of precipitating factors for syncope [3,4]
- Attacks may be associated with painful paroxysms, similar to glossopharyngeal neuralgia [3].
- Carotid sinus massage (CSM) does not characteristically provoke syncope [5].
- Failure of pacing to abolish these episodes completely [3,4,6]
- Variable response to pharmacological therapy with anti-cholinergic and

Box 1. Features of syncope in head and neck malignancy

The exact mechanism of syncope is not known but it's believed to be mediated via glossopharyngeal nerve [7,8]. Space occupying lesions in the parapharyngeal spaces are likely to irritate somatic fibers of glossopharyngeal nerve. These fibres supply the mucus membranes of pharynx, tonsillar region and the back of the tongue. General visceral afferents supply the blood pressure receptors of the carotid sinus. Afferent input travels along Hering's nerve to dorsal motor nucleus of the vagus nerve in the medulla oblongata. The efferent output from vasomotor centre then travels back via vagus nerve. Stimulation of this reflex initiates parasympathetic inhibition of sino-atrial and atrio-ventricular nodal conduction, and reduces noradrenaline-mediated vasoconstriction reducing peripheral arterial resistance. This glossopharyngeal-vagal reflex arch thus results in hypotension and bradycardia leading to syncope [9].

The involvement of this reflex pathway is supported by the results of surgical intervention with denervation of the carotid sinus that had no impact on the syncope whereas intracranial surgical resection of glossopharyngeal nerve significantly resolved the symptoms [3,4]. This phenomenon is termed 'Parapharyngeal space-occupying lesion syncope' syndrome [10] or glossopharyngeal neuralgia with syncope [1,8].

Treatment of the primary tumor with additional radiotherapy and chemotherapy should be considered (if possible) and may resolve the syncope [6].

Other options include medications (Fludrocortisone and/or Midodrine), dual chamber pacemaker implantation, and intracranial Glossopharyngeal nerve resection.

Radiotherapy is effective in up to two thirds of patients with carotid sinus hypersensitivity [1], however, most of the patients already had full radiotherapy before the syncopal symptoms or not suitable for further radiotherapy.

Pharmacological treatment in the form of Fludrocortisone and/or Midodrine is subject to variable response. Pacing is not usually effective to abolish syncope or at best is partially effective [3,4, and 6]; a pacemaker should only be considered if there is documented significant bradycardia or pauses correlating with the symptoms. Finally, surgical resection of the Glossopharyngeal nerve or carotid sinus is effective in preventing syncope and should be considered in refractory cases [8].

3. CONCLUSION

All cases with previous head & neck malignancy and new onset syncope should raise the suspicion of malignant recurrence. Relevant specialties should be involved early to help diagnose and manage such patients.

Syncope in head & neck malignancy is mediated via the Glossopharyngeal arc with a predominant vasodepressor response. Treatment of the malignant recurrence with re-irradiation +/- chemotherapy should be the goal. There is limited evidence for pacing alone and variable response to pharmacological treatment so each individual should be assessed carefully before any invasive treatment considered.

CONSENT

Patient had given informed consent for the publication of the case report.

ETHICAL APPROVAL

Not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Macdonald DR, Strong E, Nielsen S, et al. Syncope from head and neck cancer. *J Neurooncol.* 1983;1:257–267.
2. Hong AM, Pressley L, Stevens GN. Carotid sinus syndrome secondary to head and neck malignancy: case report and literature review. *Clin Oncol (R Coll Radiol).* 2000;12:409–12.
3. Cicogna R, Curnis A, DeiCasl, Visiolio, Syncope and tumors in the neck: carotid sinus or glossopharyngeal syndrome. *Eur Heart.* 1985;J6:979-84
4. Cicogna R, Bonomi FG, Curnis A, et al. Parapharyngeal space lesions syncope syndrome. A newly proposed reflexogenic cardiovascular syndrome. *Eur Heart J.* 1993;14:1476–83.
5. Johnston RT, Redding VJ. Glossopharyngeal neuralgia associated with Cardiac syncope: long term treatment with permanent pacing and Carbamazepine. *Br Heart J.* 1990;64:403–5.

6. JuJH, KangMH, KimHG, LeeGW, ParkJI, Kim JP, KangJH. Successful treatment of syncope with chemotherapy irrespective to cardiac pacemaker in head and neck cancer. *Yonsei Med.* 2009;J50:725-8.
7. Barbash GI, Keren G, Korczyn AD, et al. Mechanisms of syncope in Glossopharyngeal neuralgia. *Electroencephalogr Clin Neurophysiol.* 1986; 63:231–5.
8. Barbash GI, Keren G, Korczyn AD, et al. Mechanisms of syncope in Glossopharyngeal neuralgia. *Electroencephalogr Clin Neurophysiol.* 1986;63:231–5.
9. Luckie M. et al. Vasodepressor syncope and recurrent pharyngeal carcinoma: a form of Carotid sinus syndrome? *Br. J. Hosp. Med.* 2011;72(11).
10. Weiss S, Baker JR. The carotid sinus reflex in health and disease. *Medicine.* 1933;12:297–351.

© 2013 Baig and Irwin; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:
<http://www.sciencedomain.org/review-history.php?iid=215&id=12&aid=2086>