

Case Report

A possibly fatal complication of radiotherapy: a case report

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ABSTRACT

Radiotherapy remains as the mainstay treatment of head and neck carcinoma, including nasopharyngeal carcinoma (NPC) but may have immediate or delayed complications. Here we

present a case of bilateral vocal cord palsy as a delayed complication of radiotherapy treatment for NPC. (Rawal Med J 2013;38: 305-307).

Key words: Nasopharyngeal carcinoma, vocal cord paralysis, hoarseness.

INTRODUCTION

NPC is a common cancer in Asia, including Malaysia. It is the most common cancer originating from the nasopharynx and it is thought to be caused by viral, dietary and genetic factors. The primary treatment is radiotherapy as the tumor responds well to it. However, it does not come without complications, and some of it may even be lethal.

CASE PRESENTATION

A 63-year-old Chinese man presented to us with sudden onset of shortness of breath and stridor. The symptoms were precipitated by fever and cough for 3 days. He denied any symptoms of dysphagia, odynophagia or weight loss. He was previously diagnosed to have NPC stage T2N0M0 for which he completed conventional radiotherapy in another center about 17 years ago. During the radiotherapy, he developed angioedema compromising the airway where he required a tracheostomy for 2 weeks.

On examination, he was in respiratory distress with the usage of accessory respiratory muscles. Audible inspiratory stridor was also noted. Tongue was slightly deviated to the left. The uvula, neck and shoulder examination were all unremarkable. Flexible nasopharyngolaryngoscopy (FNPLS) in the emergency department revealed bilateral vocal cords in the median position, obliterating the airway (Fig 1).

Figure 1. FNPLS showing both vocal cords in the median position obliterating the airway.



He underwent emergency direct laryngoscopy and tracheostomy under general anesthesia and was endotracheally intubated. Findings of the direct laryngoscopy were similar to the FNPLS. Post operatively, he developed aspiration pneumonia and was treated with antibiotic and responded well. Subsequent flexible endoscopic evaluation of swallowing (FEES) revealed frank aspiration and patient then had a gastrostomy inserted. A CT scan of the head, neck and thorax showed thickened and diffused mucosa of the bilateral vocal cords and aryepiglottic fold, likely due to previous radiotherapy with superimposed inflammation without any evidence of nasopharyngeal carcinoma

recurrence. Patient was discharged home after 10 days in the hospital and currently awaiting his first follow up.

DISCUSSION

Radiotherapy can cause mucositis, skin reactions, decreased salivary production, soft tissue fibrosis and perichondritis.¹ Effect of radiotherapy on vocal cords mobility itself is uncommon.² The mechanism is still unclear. Apart from the vestibulocochlear apparatus, the hypoglossal nerve is the most frequently injured followed by the vagus nerve.³

The two main causes of vocal cord palsy are nerve injury or mechanical fixation of the vocal cord itself either by neoplastic invasion to the vocalis muscle or cricoarytenoid joint fixation. Unilateral Vocal cord palsy (VCP) is commonly caused by extralaryngeal malignancy while bilateral VCP is usually caused iatrogenically such as thyroidectomy surgery.⁴ Other causes of VCP include viral infection, laryngopharyngeal reflux or neurological disease such as Parkinsonism. VCP can present with various symptoms which include alteration of voice and difficulty of breathing. Bilateral VCP can present with normal or near normal phonation with inspiratory stridor necessitating tracheostomy.⁵

Our patient presented with a life threatening shortness of breath due to bilateral vocal cord immobility with superimposed infection 17 years after radiotherapy treatment. There was no alteration of voice noted. Bilateral VCP was not documented when he was diagnosed to have NPC or during the routine follow up after the treatment. There is still a possibility that the bilateral VCP has been there for a long time, only giving him problems this time due to the superimposed infection.

Following radiotherapy treatment, injury to the recurrent laryngeal nerve may occur at any part of the nerve, including the skull base or more distally. In some cases, the patient may present with unilateral vocal cord palsy where subclinical contralateral neuropathic changes may be present.⁶ The emergency tracheostomy which was performed in this patient was necessary to restore his airway. He will be considered for a surgical intervention later on as he did not have any other medical issues.

This may include thyroplasty, re-innervation of the posterior cricoarytenoid muscles or static procedures to enlarge the airway.⁴ Surgery remains the only beneficial treatment modalities to improve the respiratory function in this patient.⁵

Hypoglossal nerve palsy is found to be the most frequently injured from radiotherapy in NPC patient.⁷ This could happen years after the treatment with a latent period that correlates inversely with the total treatment dose.⁸ Late delayed reactions of cranial nerves palsies can be due to radiation necrosis which can mimic a tumor recurrence. It was proposed that this is due to the damage of the small and medium arterioles or by a direct effect on glial cells.⁹ The factors that are associated with increased risks of developing radiation induced cranial nerve palsy include neck fibrosis, total radiation dose and chemotherapy.¹⁰ However, another study has shown that neck fibrosis and chemotherapy have no significant association with radiation induced cranial nerve palsy.¹¹

In summary, this case demonstrated a life threatening complication of radiotherapy. The appropriate dosage of radiotherapy given to the patient can prevent radiation induced cranial nerve palsy. The patient should also be on a long term follow up for monitoring.

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