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ABOUT COVER

Peer Reviewer of *World Journal of Clinical Cases*, Konosuke Nakaji, FACP, MD, Doctor, Endoscopy Center, Aishinkai Nakae Hospital, Wakayama-shi 640-8461, Japan. parupurikopui@yahoo.co.jp

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Atypical presentation of a posterior fossa tumour: A case report

Alisha Narotam, Mikara Archary, Poobalan Naidoo, Yeshkhir Naidoo, Vanesha Naidu

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Alisha Narotam, Mikara Archary, Department of Internal Medicine, King Edward VIII Hospital - University of Kwazulu-Natal, Durban 4001, Kwa-Zulu Natal, South Africa

Poobalan Naidoo, Department of Internal Medicine, Nelson R Mandela, School of Medicine, University of Kwa-Zulu Natal, Durban 4001, Kwa-Zulu Natal, South Africa

Yeshkhir Naidoo, Vanesha Naidu, Department of Radiology, King Edward VIII Hospital - University of Kwazulu-Natal, Durban 4001, Kwazulu-Natal, South Africa

Corresponding author: Alisha Narotam, MBChB, Doctor, Department of Internal Medicine, King Edward VIII Hospital - University of Kwazulu-Natal, 719 Umbilo Road Umbilo, Durban 4001, Kwa-Zulu Natal, South Africa. alisha296@gmail.com

Abstract

BACKGROUND

We described a case of a patient with a meningioma in the posterior fossa presenting atypically with an isolated unilateral vocal cord palsy causing severe respiratory distress. This is of interest as the patient had no other symptomatology, especially given the size of the mass, which would typically cause a pressure effect leading to neurological and auditory symptoms.

CASE SUMMARY

This case report described a 48-year-old male who was married with two children and employed as a car guard. He had a medical history of asthma for the past 10 years controlled with an as-needed beta 2 agonist metered dose inhaler. He initially presented to our facility with severe respiratory distress. He reported a 1-wk history of shortness of breath and wheezing that was not relieved by his bronchodilator. He had no constitutional symptoms or impairment of hearing. On clinical examination, the patient's chest was "silent." Our initial assessment was status asthmaticus with type 2 respiratory failure, based on the history of asthma, a "silent chest," and the arterial blood gas results.

CONCLUSION

A posterior fossa meningioma of such a large size and with extensive infiltration rarely presents with an isolated unilateral vocal cord palsy. The patient's chief presenting feature was severe respiratory distress, which combined with his background medical history of asthma, was misleading. Clinicians should thus consider meningioma as a differential diagnosis for a unilateral vocal cord palsy even without audiology involvement.

Key Words: Respiratory distress; Meningioma; Unilateral vocal cord palsy; Posterior fossa

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Core Tip: This case report described an atypical presentation for a posterior fossa tumour. Initially, the patient was assessed as severe respiratory distress after a background history of asthma. However, after further investigation and management the patient had an upper airway obstruction secondary to a unilateral vocal cord palsy. This was found to be a complication of a cerebellar-pontine tumour. Upon further research, no cases have been presented recently where a patient had unilateral vocal cord palsy subsequent to the tumour. This presentation may be explained secondary to the effacement and displacement of the surrounding structures from the tumour.

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INTRODUCTION

We described a rare case of unilateral vocal cord palsy secondary to a posterior fossa tumour presenting atypically with severe respiratory distress. The patient had a background history of asthma, and initial assessment was that of status asthmaticus based on history of asthma, severe respiratory distress, and a “silent chest.” He was intubated and ventilated due to respiratory failure. In retrospect, we assessed him as having upper airway obstruction secondary to unilateral vocal cord paralysis based on stridor immediately after extubation and as evidenced by direct laryngoscopy. To identify the underlying cause of the unilateral vocal cord palsy, we undertook imaging of the head, neck, and chest, which revealed a large cerebellar-pontine tumour with abutment of adjacent structures. Debulking neurosurgery with excision biopsy demonstrated a psammomatous meningioma. At the time of publication, the patient was awaiting radiotherapy.

CASE PRESENTATION

Chief complaints

A 48-year-old man presented to the Acute Medical Unit with sudden onset shortness of breath.

History of present illness

This was the first episode of the patient presenting in acute respiratory distress with an otherwise healthy background. The patient reported a 1-wk history of feeling short of breath that was not relieved after using his inhaler.

History of past illness

The patient was diagnosed with asthma 10 years prior to presentation. It was controlled with a beta-2 agonist metered dose inhalers. No auditory fallouts were reported.

Personal and family history

The patient had no constitutional symptoms, and there was no family history reported for meningiomas either.

Physical examination

On examination, the patient required the use of accessory muscles during respiration and was significantly short of breath. On auscultation of the chest, no air entry bilaterally was heard.

Laboratory examinations

An arterial blood gas analysis was performed. It demonstrated a type 2 respiratory failure requiring intubation. During his stay in the intensive care unit, the patient had persistent respiratory acidosis with subsequent *Klebsiella pneumoniae* and *Ciprobacter koseri* cultured on the endotracheal aspirate as well as a positive blood culture for *Acinitobacter baumannii*.

Imaging examinations

After extubation, the unilateral vocal cord palsy was identified through examination under anaesthesia. As part of the diagnostic workup, the patient underwent a contrasted computed tomography scan of his head, neck, and chest. The scan identified a large, densely calcified, extra-axial right posterior fossa mass measuring 4 cm × 4 cm × 4 cm that extended into the internal auditory meatus, jugular fossa, and hypoglossal canal with inferior extension into the upper spinal canal

via the foramen magnum. This also demonstrated a resultant right supratentorial hydrocephalus. A subsequent magnetic resonance imaging (MRI) revealed a large right cerebellar pontine angle mass with associated expansion of the internal acoustic meatus and extension into the upper cervical canal, jugular fossa, and right paravertebral region (Figure 1).

FINAL DIAGNOSIS

A biopsy of the posterior fossa mass was sent for further investigation. The histology came back as a psammomatous meningioma.

TREATMENT

The patient initially received continuous nebulization, intravenous hydrocortisone, and intravenous magnesium sulphate. While still being ineffective, the patient was intubated for respiratory support. After extubation, there was a persistent stridor, and subsequently a vocal cord palsy was identified. The patient underwent a tracheostomy and was weaned off the ventilator. Once the posterior fossa mass was visualized on the computed tomography and MRI, debulking neurosurgery with excision biopsy followed by radiotherapy was performed.

OUTCOME AND FOLLOW-UP

The patient was transferred to a quaternary level facility.

DISCUSSION

Isolated left-sided vocal cord palsy with respiratory failure is a rare presentation of a tumour in the posterior fossa. In this patient, the tumour resulted in a mass effect with resultant effacement and displacement of the pons and medulla to the left. This may have explained the left-sided vocal cord paralysis. An excision biopsy demonstrated a psammomatous meningioma.

Unilateral vocal cord paralysis can be asymptomatic or can present with hoarse voice, dysphonia, dysphagia, aspiration, and coughing[1,2]. Patients may recover spontaneously in some instances, or the contralateral cord may compensate for its dysfunctional counterpart[1]. The most commonly affected side for an isolated vocal cord paralysis is the left side, as was the case in our patient[1]. This is due to the longer course of the left recurrent laryngeal nerve compared to the right side making it more vulnerable to damage, especially in the mediastinum. Most patients present in the fifth or sixth decade of life, on average at age 53 years[2]. Diagnosis of a vocal cord paralysis is dependent on confirmation during indirect laryngoscopy or laryngeal endoscopy[2], as confirmed in our patient.

The underlying cause of vocal cord palsy varies based on geographic location. Malignancy contributes to 34% of cases of vocal cord palsy[2]. Primary malignancy only accounts for 7.5%, while secondary pressure effects and nerve damage accounts for 85.0% of these cases presenting with cord paralysis[3]. If not laryngeal in origin, abnormalities of the thyroid gland, oesophagus, mediastinum, and lung are the most common causes for this presentation. An otolaryngological assessment includes otoscopy to exclude a cholesteatoma. Flexible nasolaryngoscopy or rigid laryngoscopy can also be performed to exclude infiltration of the primary lesion[4]. Radiological investigation, namely a computed tomography scan from the base of the skull to the upper mediastinum, is needed to identify the possible cause of unilateral vocal cord palsy. This is the approach that we followed.

Senior *et al*[4] reported a case involving a 78-year-old female who presented with progressive dysphonia and dysphagia. She also had further neurological fallout, which included progressive left-sided hearing loss with normal otoscopic examination. Flexible nasoendoscopy showed a unilateral vocal cord palsy. MRI revealed a primary cerebellar pontine angle meningioma arising from the jugular foramen. Another case report described a 34-year-old man who presented with dysphagia, loss of taste, and dysarthria. Laryngoscopy showed a unilateral left vocal cord palsy. Electrodiagnostic study confirmed paralysis of the lower cranial nerves (IX to XII). Further imaging with brain MRI revealed a left cerebellar pontine angle meningioma. This patient was subsequently diagnosed with Collet-Sicard syndrome (unilateral lower cranial nerve paralysis) secondary to the cerebellar pontine angle mass[5].

Our patient differed from the aforementioned cases in that he had vocal cord palsy with respiratory failure, eventually requiring a tracheostomy. The late presentation may have accounted for the severe respiratory distress that, to the best of our knowledge, has not been reported with other cases of meningioma. One may speculate that his asthma may have also contributed to his severe respiratory distress.

CONCLUSION

A meningioma in the posterior fossa of such size and infiltration as described in this case rarely presents asymptomat-

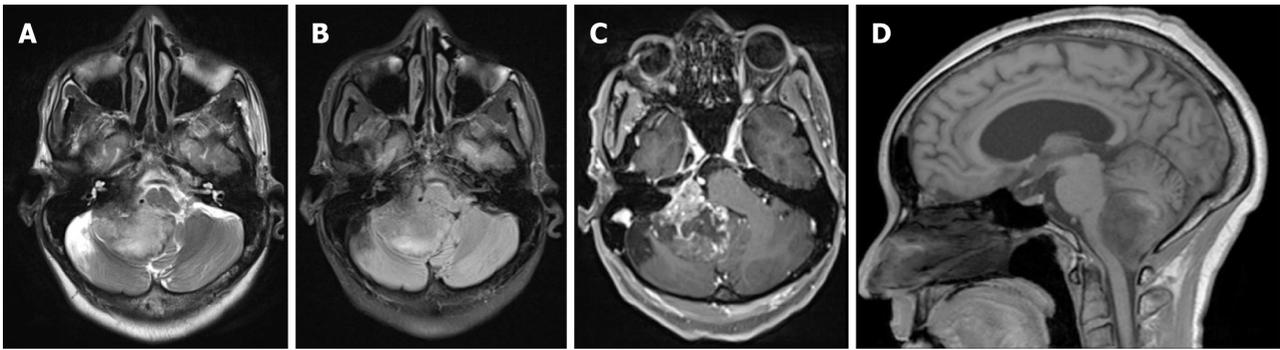


Figure 1 Right cerebellar pontine angle tumour with inferior extension to the craniocervical junction, anterior effacement, and compression of the cervical cord. A: T2-weighted axial image; B: Fluid-attenuated inversion recovery axial image; C: T1-weighted fat suppression gadolinium axial image; D: T1-weighted sagittal image.

ically or with a unilateral vocal cord palsy. Larger meningiomas are mostly symptomatic due to tissue compression and subsequent oedema. Despite this patient having both findings, the symptoms were limited. Cases described previously in the literature presented with audiological and vocal cord involvement, but the presentation of vocal cord involvement in isolation is a rare finding. Early recognition in such cases would lead to a better prognosis, especially with the possibility of resection. Imaging, histopathology, and then prompt referral to oncology is required for management planning. Clinicians should thus consider meningioma as a differential diagnosis for a unilateral vocal cord palsy, even without audiology involvement. In this case, the diagnosis in a male with isolated unilateral vocal cord palsy and respiratory failure was confounded by the history of asthma.

FOOTNOTES

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Country/Territory of origin: South Africa

ORCID number: Alisha Narotam 0000-0002-1103-5378; Mikara Archary 0000-0001-5654-4064; Poobalan Naidoo 0000-0002-5950-1585; Yeshkhir Naidoo 0000-0002-3877-2597.

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