DOI: 10.21088/ijem.2395.311X.11125.8

Indian Journal of Emergency Medicine
Volume 11 Number 1, January - March 2025

CASE REPORT

Rare Case of Diaphragmatic Paralysis following Head Massage

Rijul Bhatia[1], Unnati Singh[2], Kishalay Datta[3]

How to cite this article:

Rijul Bhatia, Unnati Singh, Kishalay Datta. Rare Case of Diaphragmatic Paralysis following Head Massage. Ind J Emerg Med. 2025; 11(1): 55-58.

ABSTRACT

Diaphragmatic paralysis is an uncommon condition usually occurring following a trauma to the neck. Diaphragmatic paralysis can be unilateral or bilateral, based on the area involved. The symptoms are late to occur and diaphragmatic paralysis is not easily diagnosed. Thus, this creates a delay in treatment initiation. The diagnosis is purely clinical and radiological evidence supports the diagnosis of diaphragmatic paralysis. In recent years, the addition of neck massage by local barber following haircut and relaxation is in trend. This can sometime turn fatal. In this case report, we discuss the prompt diagnosis of diaphragmatic paralysis in the emergency department and the further treatment protocol for such patients.

KEYWORDS

• Diaphragmatic paralysis • Head massage • Neck massage • Barber shop • Chiropractic neck manipulation • Type-2 respiratory failure

INTRODUCTION

Head (or neck) massage is a common practice following a visit to the local barber shop in India. Following a haircut, the barber tends to give head (or neck) massage for relaxation and customer satisfaction. While practising chiropractic therapy in India is rising, the massage from inexperienced personnel can sometime turn fatal for local public. It is a rare instance, but major complication, of developing diaphragmatic paralysis following a head (or neck) massage. Bilateral diaphragmatic paralysis is rare finding, due to phrenic nerve injury, following a neck massage by inexperienced provider due to vigorous neck movements. In this case report, we discuss how a local barber head (or neck) massage led to the development of bilateral diaphragmatic paralysis, the importance of history taking and clinical examination in setting the diagnosis and the further course of management in these patients. We would also like to educate the healthcare providers and the public at

AUTHOR'S AFFILIATION:

[1] Resident, Department of Emergency Medicine Max Hospital, Shalimar Bagh, New Delhi 110088, India.
[2] Resident, Department of Emergency Medicine Max Hospital, Shalimar Bagh, New Delhi-110088, India.
[3] HOD and Director, Emergency Medicine, Max Super Speciality Hospital, Shalimar Bagh, New Delhi-110088, India.

CORRESPONDING AUTHOR:

Rijul Bhatia, Resident, Department of Emergency Medicine Max Hospital, Shalimar Bagh, New Delhi-110088, India.

E-mail: rijulbhatia@gmail.com

➢ **Received:** 04-01-2025 ➢ **Accepted:** 14-02-2025

Creative commons non-commercial CC BY-NC: This article is distributed under the terms of the creative commons attribution non-commercial 4.0 License (http://www.creativecommons.org/licenses/by-nc/4.0/) which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the Red Flower Publication and Open Access pages (https://rfppl.co.in)

large to avoid these practises and consult an experienced chiropractic provider or masseuse for relaxation sessions.

CASE

A 58-year-old male, nonsmoker and non-alcoholic patient, presented to the emergency department of our hospital with complaints of gradually progressive, exertional dyspnoea and chest heaviness for past 4 months, which had increased in the last 5 days. The patient dyspnoea increased more on lying down. The patient had visited a local physician for the same. The initial vitals were within normal limits. The arterial blood gas done however was – pH: 7.28, pCO2: 76, pO2: 66, HCO3: 24, Lac: 0.5. His chest X-ray showed left-sided lung consolidation (figure 1).

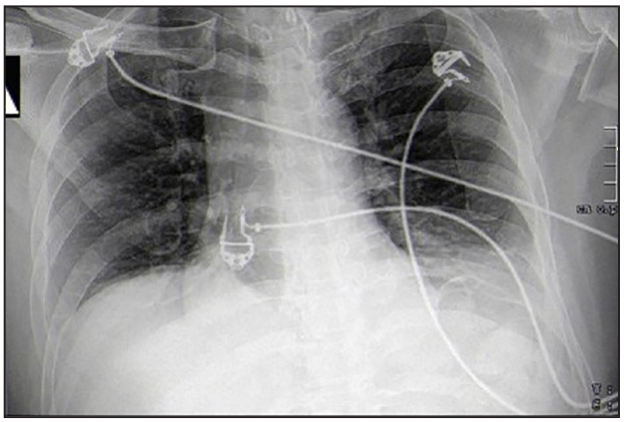


Figure 1: ***Image Source:*** Department of Radiodiagnosis, Max SHBG, New Delhi



Figure 2: NIV Setup ***Image Source:*** Google Search Engine

Blood reports - total leukocyte count (TLC) with differentials, the C-reactive protein (CRP) and procalcitonin, thyroid profile and serum electrolytes were all within normal limits. High Resolution Computed tomography (HRCT) chest done was evident of bilateral lower lobe pneumonia (left > right). His cardiac evaluation including doppler echocardiography was normal. The patient was started in-line treatment with antibiotics, inhaled bronchodilators, and non-invasive positive pressure ventilation (NIPPV). The patient showed clinical and radiological improvement. The repeat ABG's (before NIV and after NIV) has shown improvement in the carbon dioxide washout and improvement of pH. Still, the patient had unexplained hypercapnia, which led to further evaluation.

On further workup for Type-2 respiratory failure, pulmonary function tests were suggestive of severe restrictive lung functions with reduced diffusion capacity of lung. On more digging of patient history and further clinical examination, the patient revealed that he used to ask of neck massaging therapy at his local barber shop after each visit for haircut. The last encounter was 4 months back and it corelated with the disease onset. The patient was found to have paradoxical diaphragmatic movement with respiration. Neurological examination and investigations were done to ruled out any neuromuscular disorder. An autoimmune profile for collagen vascular disease was negative (including ANA and Ds DNA). Nerve conduction velocity (NCV) was also normal. Electromyography test for phrenic nerve could not be conducted. An ultrasonography of thorax revealed that there was no diaphragmatic movement even on forced inspiration (Sniff test).

After 7 days of hospitalisation, the patient was discharged in healthy condition with bi-level positive pressure ventilatory support. His regular follow-up's with ABG findings showed improvement over a period of 3 months and still on-going.

DISCUSSION

Our case is a classical example of bilateral phrenic nerve palsy following vigorous neck massage. Our patient was initially thought to suffer from lower respiratory tract infection based on chest X-ray and HRCT findings, but the blood parameters were normal. Only the arterial blood gas analysis showed the patient suffering from type-2 respiratory failure which improved by NIV support. On thorough clinical history taking and examination, the patient revealed he had regular neck massage sessions.



Figure 3: Barber Shop neck massage
Image Source: Google Search Engine

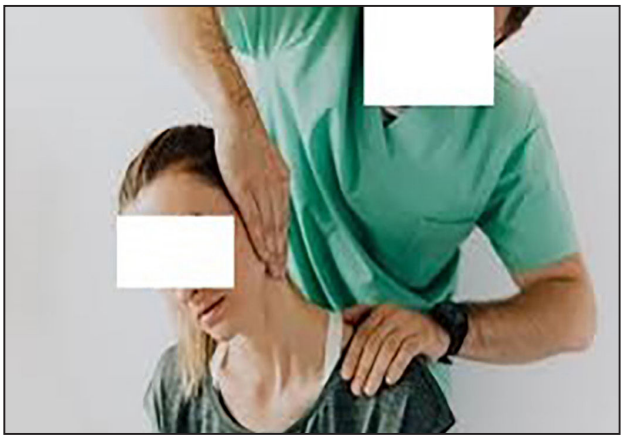


Figure 4: Chiropractic Neck Massage Session
Image Source: Google Search Engine

Generally, patients with diaphragmatic paralysis typically presents with symptoms of dyspnoea and orthopnoea. The pulmonary function tests (PFT's) that shows a restrictive process.[1,2] Most cases of either unilateral or bilateral paralysis are due to thoracic surgery or intra-thoracic malignancy, but can also result from other causes like trauma, neuromuscular disease or various inflammatory conditions like pleurisy, pneumonia, or herpes zoster infection.[2,3,4] Diaphragmatic paralysis is much more common than clinically recognized and the aetiologies remains unidentified in more than two thirds of all the cases[5].

Patient's symptoms with bilateral diaphragmatic paralysis usually worsens in the supine position[3]. The usual anatomy and physiology explain the abdominal contents tend to prevent excessive paradoxical motion and cephalad displacement of the diaphragm caused by the action of the intercostal and accessory muscles during maximal inspiration *Figure 5*.

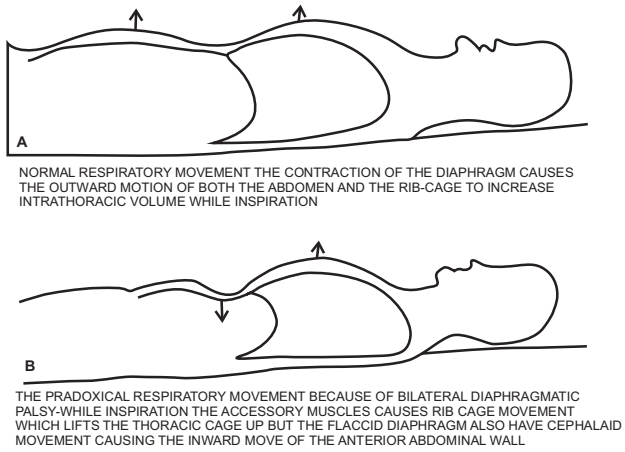


Figure 5:

When such patients are in supineposition, this protective mechanism is lost, and patients have a marked reductionin lung functions leading to occurrence of symptoms. Active vigorous neck massages result in stretching and compression of the phrenic nerve by the manipulative force. During cervical strain, the forced rotation or flexion of the occiput towards a fixed depressed shoulder can cause a stretch (traction) injury to the cervical nerve plexus and result in phrenic nerve paralysis[6].

The prognosis of the condition is based on the underlying disease process and thus, the quality of life depends on the disease condition. Based on literature available, neck manipulation leading to phrenic nerve palsy (bilateral>unilateral) have a period of 3 months to 3 years for resolution of symptoms with improvement of lung functions. Our patient took a long 14 months for the resolution of symptoms and complete recovery of the lung function tests. The diagnosis of the disease is complex and often left unnoticed due to lack of proper history taking by doctor and given by patient, both. Thus, this case report also emphasizes on the benefit of proper detail history taking and clinical examination for prompt diagnosis and better patient care.

CONCLUSION

The occurrence of bilateral diaphragmatic paralysis is rare when compared to unilateral paralysis. The phrenic nerve palsy is the cause

for diaphragmatic paralysis. The commonest cause for phrenic nerve palsy is intrathoracic surgery of neck trauma and vigorous neck massages, being the cause, is rare and often misdiagnosed. The condition is often overlooked and left undiagnosed. As per literature available, we found only 2-3 cases of phrenic nerve palsy due to neck manipulation. This case report also highlights the importance of brief history taking and clinical examination with identification of minute details available from the patient history and radiological findings.

Conflicts of interest: There is no conflict of interest.

REFERENCES

1. Nadel, J.F. Murray, J.F. Respiratory medicine W.B. Saunders, Philadelphia, P.A., 1994; 2495-2499.
2. Sandham, J.D· Shaw, D.T. Buenter, C.A. Acute supine respiratory failure due to bilateral diaphragmatic paralysis. *Chest.* 1977; 72: 96-98
3. Kreitzer, S.M. Feldman, N.T. Saunders, N.A. Bilateral diaphragmatic paralysis with hypercapnic respiratory failure - *Am J Med.* 1978; 65: 89-95.
4. Stowasser, M. Cameron, J. Oliver, WA Diaphragmatic paralysis following cervical herpes zoster *Med J Aust.* 1990; 153: 555-556.
5. Piehler, J.M. Pairolero, P.C. Bracey, D.R. Unexplained diaphragmatic paralysis: a harbinger of malignant disease? *J Thorac Cardiovasc Surg.* 1982; 84: 861-864.
6. Iverson, L.I. Mittal, A. Dugan, D.J. Injuries to the phrenic nerve resulting in diaphragmatic paralysis with special reference to stretch trauma *Am J Surg.* 1976; 132: 263-269.