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Clinical Image

Isolated Hypoglossal Nerve Palsy in a Patient with Non-Small Cell Lung Carcinoma: Paraneoplastic Neurological Syndrome?

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Abstract

Paraneoplastic neurologic syndrome is a group of disorders resulting from damage to the nervous system in carcinoma, remote from primary site and not due to metastasis, infection, or metabolic complication associated with cancer. Patient with small cell lung cancer sometimes shows various paraneoplastic neurological syndromes, but patient with non-small cell lung cancer rarely shows paraneoplastic neurologic syndromes. Here we wish to report a case of 65-year-old female presented to our clinic with isolated right sided hypoglossal nerve palsy and poorly differentiated adenocarcinoma of lung.

Introduction

Hypoglossal nerve palsy is not uncommon in neurological diseases but if it presents as isolated cranial nerve palsy it is a diagnostic challenge. Isolated involvement is less common due to proximity of twelfth nerve to other cranial nerves and vessels. The causes of isolated hypoglossal nerve palsy are nasopharyngeal carcinoma, metastasis to the base of skull, carcinomatous meningitis, trauma, dolichoectasia of the vertebral artery, dissection of extracranial internal carotid artery, hypoglossal schwannoma, Epstein Barr virus infection, post vaccination cranial neuritis etc [1]. Paraneoplastic syndromes occur due to immune cross-reactivity between tumour cells and components of the nervous system. We diagnosed a case of poorly differentiated adenocarcinoma of lung presenting with isolated hypoglossal nerve palsy.

Case Report

A 65-year-old female presented with complaints of decreased appetite and loss of weight for 2 years and since last 1 month she started complaining of difficulty in speaking with abnormal deviation of tongue towards right side. There was no history of cough, haemoptysis, chest pain, dyspnoea, hoarseness of voice, nasal regurgitation, facial deviation, numbness and weakness. General physical examination of patient was unremarkable except thin built and pallor. On central nervous system examination, higher mental functions of patient were within normal limits. Tongue was abnormally deviated towards right (Figure 1) with unilateral right sided atrophy and fasciculations at rest suggestive of right sided hypoglossal nerve palsy. Rest of the cranial nerves were intact. On motor examination bulk was reduced in all four limbs with power of 4/5 in all four limbs and deep tendon reflexes were 2+ in all limbs. Gait of patient was normal. Plantar response was flexor bilateral and there was no fasciculation in any limb. Sensory, cerebellar and extrapyramidal system examination within normal limits. Rest of the systemic examination of patient was also normal.

Laboratory investigations revealed mild microcytic hypochromic anaemia with a Hb 9.2 gm/dl and raised Erythrocyte Sedimentation Rate (ESR) of 60 mm in first hour. Renal function test of patient including blood urea, serum creatinine, serum calcium and phosphate were within normal limits. Liver function test of patients how raised level of Alkaline Phosphatase Enzyme (ALP) 575 U/L with normal level of SGOT, SGPT and serum bilirubin. Chest x-ray of patient shows a lesion in upper lobe of right lung with mediastinal widening and bilateral hilar prominence (Figure 2). CSF fluid was acellular, no malignant cells were seen. Serum Angiotensin Converting Enzymes (ACE) levels were within normal limits. Contrast enhanced CT scan of chest and abdomen was done which revealed a heterogeneously enhancing lesion in upper lobe of right lung (Figure 3) with mediastinal lymphadenopathy and left adrenal mass.

MRI brain and CECT neck with skull base revealed no brain, neck metastasis or bone erosions that could explain local hypoglossal nerve involvement. Patient underwent fibreoptic bronchoscopy and endobronchial lung biopsy taken along with transbronchial fine needle aspiration cytology

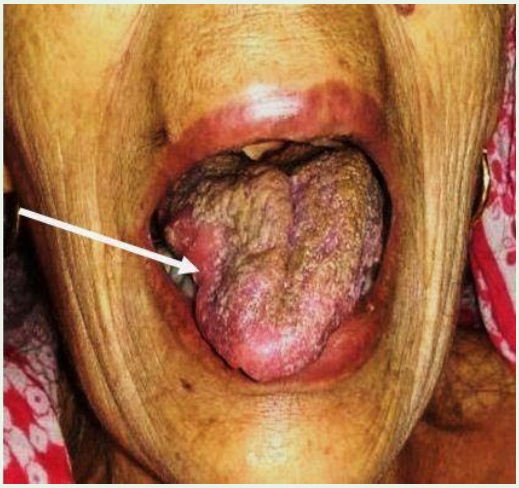

Figure 1: Showing abnormal deviation atrophy of tongue (rightside).

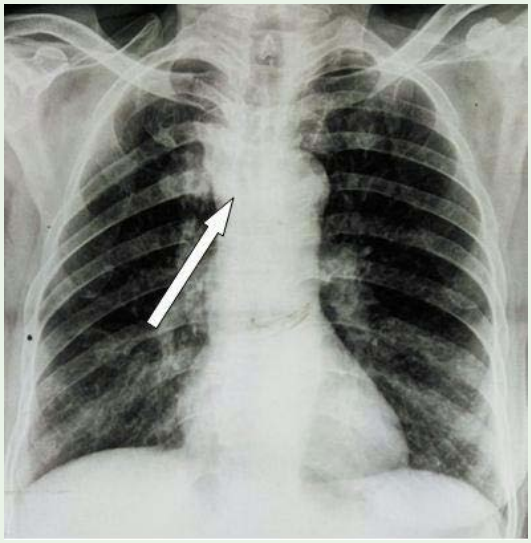

Figure 2: Chest X-Ray showing lesion in right side of lung with mediastinal widening.

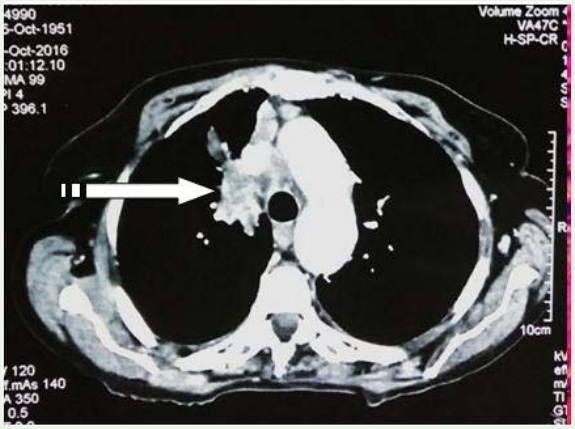

Figure 3: CECT chest showing mass lesion in right lung.

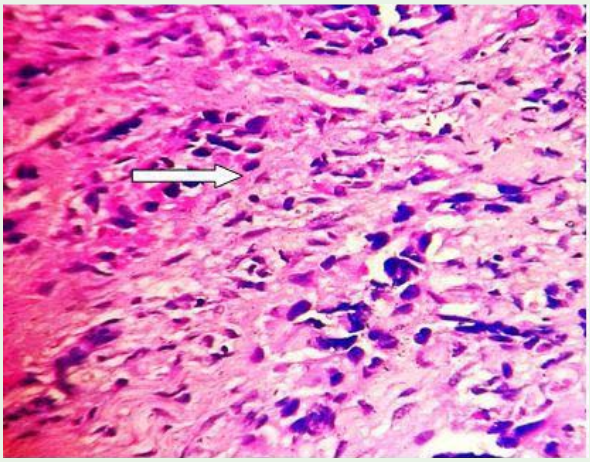

Figure 4: Histopathological slide showing dysplastic cell suggestive of adenocarcinoma.

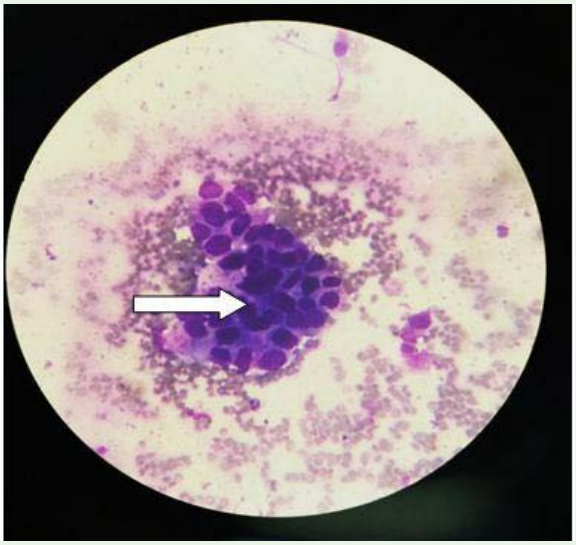

Figure 5: Transbronchial FNAC from subcarinal lymph node showing groups of large dysplastic cells s/o carcinoma, non-small cell type.

(Figure 4). Histopathology and cytology report revealed poorly differentiated adenocarcinoma of lung (Figure 5). To rule out paraneoplastic neurological syndrome, serum antineural antibody profile (anti-Hu, anti Collapsin Response Mediating Protein (CRMP)-5, anti-VGCC antibodies) was done. Anti-Hu antibodies were found positive in our patient.

Patient was started on Erlotinib which is epidermal growth factor receptor inhibitor. After one month of treatment appetite of patient improved and patient also gain some weight but there was no improvement in hypoglossal nerve palsy.

Discussion

Non-small cell lung carcinoma is the most common type of bronchogenic carcinoma in non-smokers, this type of carcinoma is slow growing and usually peripheral in location. Non-small cell lung carcinoma tends to remain localized longer and have a slightly

better prognosis than do the undifferentiated carcinoma of lung. The incidence of paraneoplastic neurological syndrome in lung cancer is around 10% [2]. Paraneoplastic neurological syndromes are the neurological disorders caused by the remote effects of cancer. In response to the development of a tumour, some antineural antibodies form by the body against the neoplastic cells. These antibodies are commonly known as onconeural antibodies. These antibodies and the T lymphocytes which are generated against onconeural antigen inadvertently attack both the tumour cells and normal nervous tissue. Isolated hypoglossal nerve palsy is a rare clinical finding and an ominous sign. Therefore, timely diagnosis of primary aetiology is of major importance. The hypoglossal nerve is pure motor nerves that innervate the muscles of the tongue. It could be divided into 5 segments based on location: medullary (nuclear), cisternal (extramedullary intracranial), skull base (the segment which passes through the hypoglossal nerve canal), nasopharyngeal, oropharyngeal and carotid (in close vicinity to the glossopharyngeal and vagus nerve as well as to the internal carotid artery), and sublingual space (where its branches terminate innervating lingual muscles). The nerve can be involved anywhere along its course. Hence localization of site of lesion is very important. Occurrence of hypoglossal nerve palsy along with other cranial nerve involvement and pyramidal tract signs is not an uncommon finding. In a retrospective analysis of 100 hypoglossal nerve palsy cases, Keane J. found that predominantly malignant tumours were the most common cause of hypoglossal nerve palsy (49 cases), whereas other causes were trauma, medullary infarctions, multiple sclerosis, Guillain-Barre neuropathy and infection [3]. Combarros, et al. reported 9 patients with isolated hypoglossal nerve palsy caused by tumours, Chiari malformation and dural arteriovenous fistula, whereas, in 4 patients, who had an excellent outcome, no cause was found [4]. In maximum cases, the neurological disorder develops before the primary neoplasm becomes clinically evident, and the patient consults a neurologist for the same as in this case. However, isolated hypoglossal nerve has been described in a few case reports and small case series but till date there is no such case report of paraneoplastic isolated hypoglossal nerve palsy in non-small cell lung carcinoma in the literature.

Conclusion

Isolated hypoglossal nerve palsy is a rare clinical finding and an ominous sign which requires an intensive work-up to find out underlying aetiology. In our case, we could not find out the cause of hypoglossal nerve palsy. It could be a paraneoplastic manifestation of small cell carcinoma of lung (well known for paraneoplastic syndromes) but there is no such case report in literature.

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