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Paraneoplastic Syndrome of Myasthenia Gravis Presenting as Isolated Vocal Cord Paralysis in a Patient with Breast Cancer: Case Report and Literature Review

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Abstract- 53-year-old lady presented with progressively worsening loss of voice. Over time she could only be heard upon speaking directly into the ears of her family or physicians. She lost her job as a receptionist due to her loss of voice. She was still on adjuvant treatment for breast cancer. She underwent CT/PET, ENT consultation and a battery of paraneoplastic antibody tests. ENT consultation confirmed vocal cord paralysis. ENT exam and CT/PET found no evidence of vocal cord mass or any lesion compressing the laryngeal nerves. No mass was found in the superior mediastinum. She had a positive antibody test for anti-acetylcholine receptors. Treatment with pyridostigmine reversed her vocal cord paralysis. This is the first report of a patient with breast cancer associated paraneoplastic myasthenia gravis syndrome.

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Paraneoplastic Syndrome of Myasthenia Gravis Presenting as Isolated Vocal Cord Paralysis in a Patient with Breast Cancer: Case Report and Literature Review

David G. Morrison ^α & Chrystina Castellon ^ο

Abstract- 53-year-old lady presented with progressively worsening loss of voice. Over time she could only be heard upon speaking directly into the ears of her family or physicians. She lost her job as a receptionist due to her loss of voice. She was still on adjuvant treatment for breast cancer. She underwent CT/PET, ENT consultation and a battery of paraneoplastic antibody tests. ENT consultation confirmed vocal cord paralysis. ENT exam and CT/PET found no evidence of vocal cord mass or any lesion compressing the laryngeal nerves. No mass was found in the superior mediastinum. She had a positive antibody test for anti-acetylcholine receptors. Treatment with pyridostigmine reversed her vocal cord paralysis. This is the first report of a patient with breast cancer associated paraneoplastic myasthenia gravis syndrome.

I. INTRODUCTION

Myasthenia gravis is an uncommon disease. MG affects 50 to 200 per million people. It is newly diagnosed in three to 30 per million people per year in the USA (1-3). Isolated vocal cord paralysis (VCP) as the initial manifestation of myasthenia gravis is a very rare event occurring in a large case series in only 7 of over 1500 patients (4). Malignancy associated myasthenia gravis is also relatively rare with thymoma being the most well recognized offender (3,5).

Malignant causes of direct VCP are also uncommon. Breast cancer causing vocal cord paralysis has rarely been reported due to actual metastatic deposits of tumor in the vocal cord or compressing the larynx or laryngeal nerves (6). A prospective evaluation of vocal cord paralysis found left sided non-small cell lung cancer to be the most common culprit. This was most often due to compression of the left recurrent laryngeal nerve. A rare case of breast cancer as the etiology was reported by the same authors. None of their patients who underwent antibody panel assays had positive results. Autopsy series and small case series also indicate metastases to the larynx are very uncommon (8-11). Metastatic involvement of the larynx from distant cancers is rare. Up until 1996 only 143

cases had been reported (8,11). Metastatic tumors account for 0.09 to 0.4% of all laryngeal tumors (10). The most common primary metastatic to the larynx was melanoma followed in descending order by renal cell carcinoma, lung cancer, breast, prostate and colon cancers (8).

Paraneoplastic antibodies against acetylcholine and the the Hu antigen have been reported in patients with thymoma and small cell lung cancer, respectively (7). Paraneoplastic antibody syndromes may precede, occur simultaneously with or follow the occurrence of a malignancy (8). This is the first report of a patient with breast cancer with paraneoplastic myasthenia gravis syndrome causing VCP.

II. MATERIALS AND METHODS

The patient while premenopausal at age 48 developed a mammogram only detected left upper outer quadrant T1bN0M0 well differentiated, Bloom-Richardson 4/9, infiltrating ductal carcinoma that was strongly estrogen and progesterone positive and negative for HER-2-neu expression. Her Oncotype DX score was 12. She had a lumpectomy and sentinel lymph node biopsy followed by adjuvant radiation. She received adjuvant tamoxifen. Three and a half years later she presented to clinic for an unscheduled appointment. She noted severe loss of the ability to speak loud enough to be heard over the phone or by people standing near her. Her only other complaint on extensive review of systems was chronic mild right neck pain for the past 7 years. Her physical exam other than her voice, mammogram and routine labs which included a complete blood count and comprehensive metabolic panel were normal. Thyroid functions were ordered and were normal.

CT/PET was obtained from vertex of skull to midhigh as part of her evaluation with the primary concern being recurrent breast cancer compressing the recurrent laryngeal nerve or directly affecting vocal cord motion. Orthopedic consultation was obtained in view of her neck pain. No direct cause of laryngeal dysfunction was identified by our consultant. ENT consult included direct laryngoscopy. Vocal cord paralysis was observed

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but no mass effect was identified. This was consistent with the CT/PET evaluation. In view of the persistence of her severe lack of ability to phonate despite a period of voice rest, serum was sent to QUEST labs for paraneoplastic antibody evaluation. Direct clinical observation of the patient's voice was used to follow her progress.

III. RESULTS AND DISCUSSION

It was observed that her voice went from barely audible at the start of clinic visits to essentially silent with repeated attempts to speak. Her antibodies against the acetylcholine receptor were positive. After initiation of pyridostigmine her voice became louder, and she did not demonstrate fatigue of her voice during clinical interviews.

VCP in this patient followed resection of the primary cancer by several years. Careful radiographic evaluation and multiple consultants did not identify a direct cause of VCP by tumor or other lesion causing laryngeal muscle or nerve compression. Expanding our differential to include a possible paraneoplastic syndrome led to the recognition of elevated levels acetylcholine receptor antibodies. No other manifestations of MG were observed. Treatment with pyridostigmine has resulted in slow but steady improvement in vocal cord function.

IV. CONCLUSIONS

VCP is a recognized symptom of malignancy, usually lung cancer. Paraneoplastic MG is most often seen with thymoma, however, in view of our recent report it would be prudent to investigate the presence of a paraneoplastic MG syndrome in any patient with a history of cancer who presents with VCP and negative radiographic studies for recurrent laryngeal nerve compression. Her follow up has been adjusted from every 6 months to every 3 months due to concerns that this may herald return of her breast cancer (12) as well as the risk of possible generalized MG (13).

REFERENCES RÉFÉRENCES REFERENCIAS

1. Kahan S (2005). In a Page: Neurology. Lippincott Williams & Wilkins. p. 118. ISBN978-1-4051-0432-6.
2. Kaminski HJ (2009). Myasthenia Gravis and Related Disorders (2 ed.). Springer Science & Business Media. p. 72. ISBN978-1-59745-156-7.
3. McGrogan A, Sneddon S, de Vries CS (2010). "The incidence of myasthenia gravis: a systematic literature review". *Neuroepidemiology*. 34 (3): 171–183. doi: 10.1159/000279334. PMID20130418. S2CID34447321.
4. Xia, W and Huang, R Dysphonia as a primary manifestation in myasthenia gravis (MG): A retrospective review of 7 cases among 1520 MG patients *J Neurol Sci* 260:16-22, 2007.

5. Lullis, F, Amoroso, L, Blair, L et al Unexpected vocal cord paralysis and Myasthenia Gravis in a patient with Squamous Cell Lung Cancer Case Report, *J Clin Exp Oncol* 3:2 doi:10.4172/2324-9110.1000122.
6. Knudsen, R, Gaunsbaek, M, Shultz, J et al Vocal cord paralysis as primary and secondary results of malignancy: A prospective descriptive study *Laryngoscope Invest Otolaryngology* 4: 241-245, 2019.
7. Chang CY, Martinu T, Witsell DL. Bilateral vocal cord paresis as a presenting sign of paraneoplastic syndrome: case report. *Otolaryngol Head Neck Surg* 130: 788–790, 2004.
8. DeBois, J TxNxM1: The Anatomy and Clinics of Metastatic Cancer pages 199-200 Kluwer Academic Publishers Boston, USA, 2002.
9. Batsakis, J, Luna M Metastases to the larynx *Head and Neck Surg* 7: 458-460, 1985.
10. Ferlito, A, Caruso, G, Recher G Secondary laryngeal tumors: review of 7 cases. *Arch Otolaryngol H. N. Surg* 114: 635-639, 1988.
11. Nicolai, P, Puxeddu, R, Cappiello, J et al Metastatic neoplasms to the larynx. Report of three cases. *Laryngoscope* 106: 851-855, 1996.
12. Henry K Paraneoplastic syndromes: Definitions, classification, pathophysiology and principles of treatment *Seminars Diagnostic Pathology* 36:204-210, 2019.
13. Li, M, Ge, F, Guo, R et al Do early prednisolone and other immunosuppressant therapies prevent generalization of ocular MG in Western populations: A review and meta-analysis *Ther Adv Neurol Disorders* 12:1-8, 2019.