Internal Medicine and Medical Investigation Journal
E-ISSN: 2474-7750
Homepage: www.imminv.com

CASE REPORT

Rare Coexistence of Myasthenia Gravis and Lambert-Eaton Myasthenic Syndrome with Adenocarcinoma of the Bladder: Case Report

Nahid Ashjazadeh[1], Maryam Sharifian Dorche[2]*, Soheila Zareifar[3], Masood Nomovi[4], Amirhossein Sharifian Dorche[5]

[1]*Department of Neurology, Shiraz Neurosciences Research Center, Shiraz University of Medical Sciences, Shiraz, Iran*

[2]*Department of Neurology, Clinical Neurology Research Center, Shiraz University of Medical Sciences, Shiraz, Iran*

[3]*Department of Pediatrics, Shiraz University of Medical Sciences, Shiraz, Iran*

[4]*Department of Internal Medicine, Shiraz University of Medical Sciences, Shiraz, Iran*

[5]*Jahrom University of Medical Sciences, Jahrom, Iran*

Corresponding Author: Maryam Sharifian Dorche, E-mail: maryamsharifian25@gmail.com

ARTICLE INFO

Article history
Received: Jul 21 2016
Accepted: May 12 2017
Published: Oct 05 2017
Volume: 2
Issue: 4

Conflicts of interest: None
Funding: None

Key words
Lambert-Eaton Myasthenic Syndrome,
Adenocarcinoma,
Bladder,
Myasthenia Gravis

ABSTRACT

Background: The presence of both myasthenia gravis (MG) and Lambert-Eaton myasthenic syndrome (LEMS) in one patient is very rare. Here, we report the case of a patient with these coexisting conditions. **Case Presentstion:** An 82-year-old man with a history of adenocarcinoma of the bladder was referred to the neurology ward with diplopia, dysphagia, ptosis in the left eye, weakness in both lower extremities, and autonomic dysfunction. Coexistence of MG and LEMS was diagnosed according to clinical and para-clinical evaluations. **Conclusion:** Coexistence of MG and LEMS is very rare, but this presentation in a patient with a history of adenocarcinoma of the bladder has not been previously reported. We emphasize the importance of carefully evaluating patients with LEMS for any underlying malignancy.

INTRODUCTION

Myasthenia gravis (MG) is a post-synaptic disorder, and Lambert-Eaton myasthenic syndrome (LEMS) is a pre-synaptic disorder; both are well-known autoimmune neuromuscular junction disorders (1). LEMS is also a rare but well-known paraneoplastic disorder and is an autoimmune disorder that affects the neuromuscular junction. In 1956, Lambert and colleagues first reported six patients with atypical myasthenia and lung carcinoma. These patients had a specific response to repetitive nerve stimulation (RNS) that differed from the responses of patients with MG (2). Wirtz et al. reported a prevalence rate of 2.3 per million (annual incidence, 0.5 per million) for LEMS (3). In their study, this incidence rate was 1.4 times lower than MG. The mean age of these patients was 58 years. The syndrome is known to relate to a variety of malignancies, especially small-cell carcinoma of the lung. Rare case reports in the literature reported the relationship between LEMS and bladder and ureter cancers, especially transitional cell carcinoma of the bladder (4). Considering the underlying cause of the condition, it has a very poor prognosis (4) Coexistence of both MG and LEMS is very rare. Here, we report the case of an 82-year-old man with these coexisting conditions.

CASE PRESENTATION

The patient was an 82-year-old Jewish man with a history of adenocarcinoma of the bladder since about 11 months before admission to our center. He received several rounds of chemotherapy. He was referred to the neurology clinic because of dysphagia, ptosis in the left eye, diplopia, autonomic dysfunction, and weakness in both lower extremities. In neurological examinations, vital signs were within normal ranges, but orthostatic hypotension was present. Left eye ptosis was observed. In cranial nerve examination, gag reflex was impaired. In manual muscle strength testing, the power decreased to 4 out of 5 in both lower extremities. Deep tendon

Published by Mehrabani Publishing LLC.

http://dx.doi.org/10.24200/imminv.v2i4.71

reflexes were significantly decreased. Sensory examinations (light touch, pinprick) were normal, and Babinski's signs were down-going bilaterally.

In laboratory tests, only a minimal elevation was observed in blood urea nitrogen (35 mg/dl) and creatinine (2.1 mg/dl); other lab results were within normal ranges. Serum titer of antibodies against AChRs was significantly elevated (7.8 nmol/L; normal level, <0.1 nmol/L).

Brain magnetic resonance imaging showed meningioma in the frontal lobe. Chest computed tomography did not show any sign of malignancy in the lung and was negative for thymoma. The edrophonium test (Tensilon test) showed significant clinical improvement of the left-eye ptosis. Electromyography and nerve conduction studies were normal. RNS with high frequency stimulation (30 Hz) showed a significant increase (400%) in increment in two samples. The patient's symptoms gradually improved after treatment with both prednisolone (20 mg per day) and pyridostigmine (240 mg per day). Considering the patient's history, physical examination, and para-clinical evaluations, coexisting MG and LEMS was diagnosed.

DISCUSSION

Typical patients with LEMS have a triad of proximal muscle weaknesses, areflexia, and autonomic dysfunction (4). RNS shows greater-than-100% incremental changes on high-rate stimulation. In most cases, a para-neoplastic origin from small-cell carcinoma of the lung is present (4,5). Conversely, oculobulbar symptoms, elevated anti-AChR antibody titers, and a positive edrophonium test are typical presentations of MG (5). The patient we report here had a unique profile. Oculobulbar symptoms, elevated anti-AChR antibody titers, a positive edrophonium test, and significant response to treatment favored a diagnosis of MG.

However, presence of areflexia, abnormal electrophysiological findings, and underlying malignancy favored a diagnosis of LEMS. Considering these facts, the coexistence in our patient of MG and LEMS, although very rare, was possible. In 1987, Oh et al. first identified what they termed overlap myasthenic syndrome (6). They used this term to describe a patient with combined MG and LEMS (6). In 1988, Taphoorn et al. reported another patient with coexistence of both diseases (7).

In 2012, Kim et al. reported the case of a 48-year-old woman with combined MG and LEMS, which was diagnosed according to her clinical and electrophysiological features. Their patient had a significant response to treatment with anticholinesterase inhibitors and steroids, as did our patient (8). Our patient, however, had one other rare condition: adenocarcinoma of the bladder. LEMS is thought to have a paraneoplastic origin from small-cell carcinoma of the lung. Some rare case reports have chronicled the relationship between this condition and malignancies in the bladder, especially transitional cell carcinoma (4). Coexistence of MG and LEMS is very rare, but this presentation in our patient, who had a history of adenocarcinoma of the bladder, has not been previously reported.

CONCLUSION

Patients with LEMS should be evaluated very carefully for underlying malignancies. In most cases, the underlying malignancy is in the lung, but an extra-pulmonary origin, such as in the urinary system, is possible. Moreover, in cases of overlap syndrome, treatment of MG may improve the general condition of the patient.

ACKNOWLEDGEMENT

The authors thank Ms. Kayvan Shokoh for editorial assistance.

AUTHOR CONTRIBUTIONS

All authors contributed equally to this work.

REFERENCES

1. Sha SJ, Layzer RB. Myasthenia gravis and Lambert-Eaton myasthenic syndrome in the same patient. *Muscle Nerve*. 2007;36:115–117
2. Lambert EH, Eaton LM, Rooke ED. Defect of neuromuscular conduction associated with malignant neoplasms. *Am J Physiol*. 1956;187:612–613.
3. Wirtz PW, Nijnuis MG, Sotodeh M, Willems LN, Brahim JJ, Putter H, et al. The epidemiology of myasthenia gravis, Lambert-Eaton myasthenic syndrome and their associated tumours in the northern part of the province of South Holland. *Journal of Neurology*. 2003;250(6):698-701.
4. Collins DR, Connolly S, Burns M, Offiah L, Grainger R, Walsh JB. Lambert-eatonmyasthenic syndrome in association with transitional cell carcinoma: a previously unrecognized association. *Urology*. 1999 Jul;54(1):162.
5. Chang A, Wang HC, Hsu WC.Lambert-Eaton myasthenic syndrome in mixed small cell carcinoma and adenocarcinoma of extrapulmonary origin. *J Clin Neurosci*. 2013 Apr;20(4):604-6.
6. Oh SJ, Dwyer DS, Bradley RJ. Overlap myasthenic syndrome: combined myasthenia gravis and Eaton-Lambert syndrome. *Neurology*. 1987 Aug;37(8):1411-4.
7. Taphoorn MJ, Van Duijn H, Wolters EC. A neuromuscular transmission disorder: combined myasthenia gravis and Lambert Eaton syndrome in one patient. *J Neurol-Neurosurg Psychiatry*. 1988 Jun;51(6):880-2.
8. Kim JA, Lim YM, Jang EH, Kim KK.A patient with coexisting myasthenia gravis and lambert-eaton myasthenic syndrome. *J Clin Neurol*. 2012 Sep;8(3):235-7.