

Pembrolizumab Induced Myasthenia Gravis in a Metastatic Lung Cancer Patient - A Teachable Moment

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Introduction

- Pembrolizumab is a human monoclonal antibody that works by blocking the Programmed cell death Protein 1 (PD-1/PD-L1) pathway and is approved by FDA for use in selective high-grade malignancies.
- Although rare, one of side effects of Pembrolizumab includes Myasthenia gravis.

Clinical Course

- An 83 year old Caucasian female presented to our emergency department in 3/2022 complaining of generalized weakness, diplopia, drooping eyelids, progressive dysphagia with initially liquids then solids for the last few days prior to the admission.
- She has a past medical history of Hypertension, Hyperlipidemia, Type II diabetes mellitus, Temporal lobe epilepsy, Pulmonary embolism, Stage IIIb Squamous cell lung cancer with paratracheal nodes involvement.
- She was diagnosed with a biopsy proven stage 1 poorly differentiated squamous cell lung cancer in 3/2021 based on an incidental CT scan (fig 1) and underwent a Robotic XI right upper lobectomy, bronchoscopy and mediastinal lymph node dissection.
- Follow up PET scan in 11/2021 showed hypermetabolic node (fig 2) and underwent a mediastinoscopy with a level 7 paratracheal node positive for squamous cell cancer. PD-L1 22C3 tumor proportion score 95%. Patient was started on Carboplatin, Taxol and Pembrolizumab every 3 weeks. Her last Pembrolizumab was on 3/21/2022.
- Patient smoked for 45 years and quit in 2000. Family history is significant for breast cancer in daughter at age 51, positive BRCA 1.
- Physical exam significant for bilateral ptosis R > L, mild dysarthria and bilateral proximal lower limb weakness.

Imaging

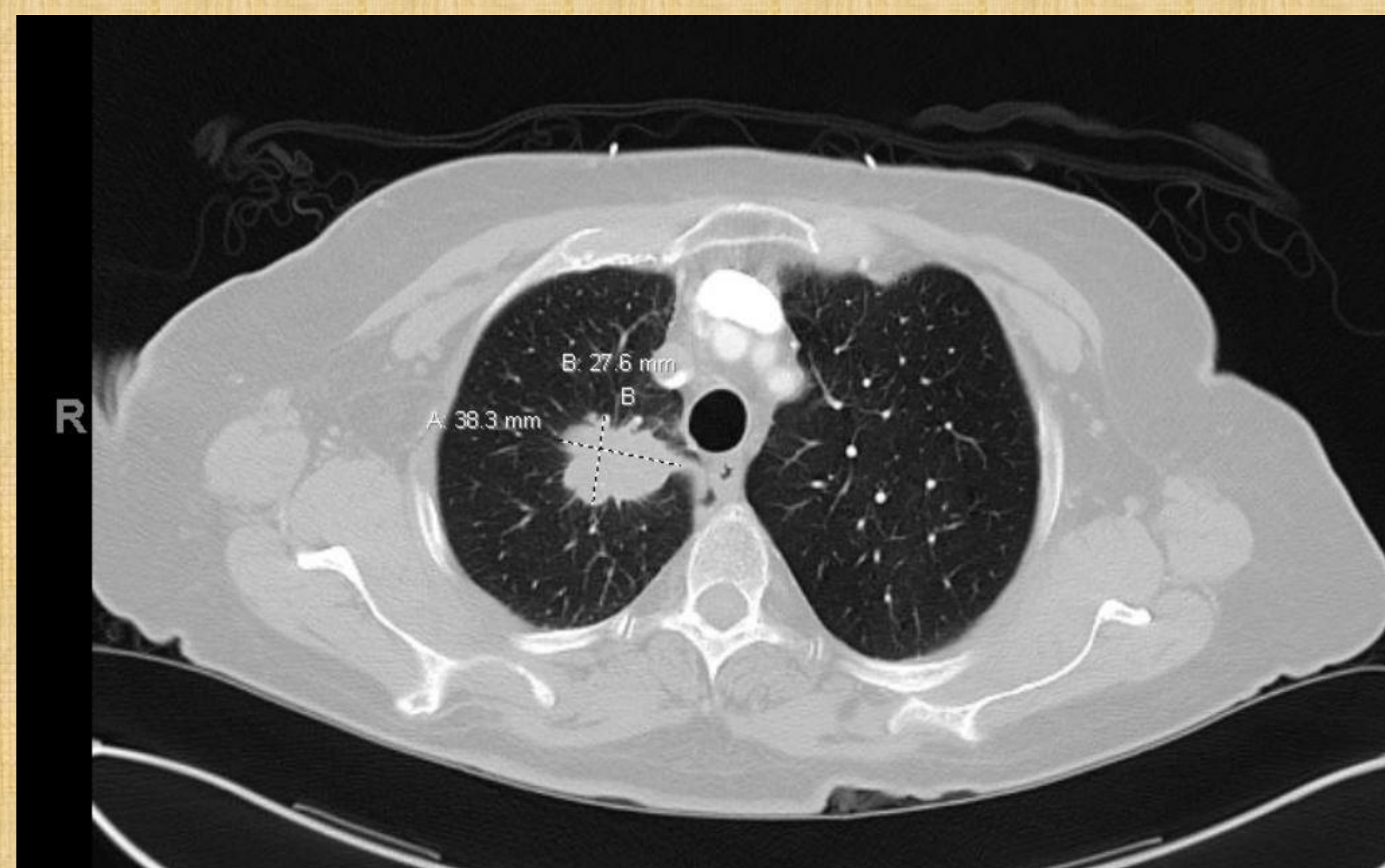


Fig 1



Fig 2

Labs

- Lyme Ab IgG and IgM: Negative
- MuSK Ab: Negative, <1:10
- Voltage gate calcium channel Ab: Negative, <30pmol/L
- TSH: 1.19 IU/L
- CK: 545 IU/L
- Angiotensin Converting enzyme: 48 U/L
- Para neoplastic panel: Negative
- Acetylcholine binding Ab: Negative
- Acetylcholine modulating Ab: Negative
- Acetylcholine blocking Ab: Negative
- Striated muscle IgG Ab: Negative
- Titin Ab: Negative

Clinical course cont.

- She was started on Pyridostigmine 60 mg every 6 hr, IV solumedrol 40 mg Q 12 hr, had 7 sessions of plasmapheresis on alternate days and received 2 doses of Rituximab treatment.
- Work up was negative for CT head, MRI brain, fluoroscopy esophagus was unremarkable, CT chest, abdomen and pelvis was negative for acute findings. Laboratory work up as showed below.
- Palliative care was consulted and had a goals of care discussion with the patient family and the patient and patient was discharged to a skilled nursing facility on comfort measures and prednisone taper.

Discussion

- Seronegative myasthenia gravis is a rare complication of Pembrolizumab and there is limited literature review. Patients with Pembrolizumab induced myasthenia gravis usually have poor clinical outcomes.
- Aggressive multi-modality treatments with seroids, pyridostigmine, plasmapheresis, and rituximab gave my patient a fighting chance.
- Multi-disciplinary approach with input from Hematology-Oncology, Neurology, Palliative care, Nephrology and Hospice care teams was crucial in clinical care.
- Early involvement of palliative care discussions greatly helped our patient and her family.

References

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