

## INTRODUCTION

- Thymic tumors are rare malignancies with less than 1% prevalence in adult life with increased incidence in the middle aged and peak in the seventh decade of life but no gender preference.
- Traditionally, thymoma is encapsulated tumors, associated with myasthenia gravis, incidentally, found on imaging, and rarely metastatic.
- Thymic carcinomas, on the other hand, make up around 15% of all primary thymic epithelial tumors.
- They are aggressive growing neoplasms that spread by lymphatic and hematogenous spread.

## CASE DESCRIPTION, INVESTIGATIONS & TREATMENT

- 40-year-old male, avid ice hockey player, no active medical history presented with progressive dyspnea, and orthopnea after COVID-19 infection.
- Vitals- BP 111/70, HR 112, RR 26, 2L NC
- Labs- Na 128, K 5.4, Alk Phos 153, ALT/AST-1241/1613, lactic acid 10.78, WBC 17.8, Hg 12.8, Plt 624.
- Chest x-ray- moderately enlarged cardiac silhouette, a large lobulated left mediastinal mass obscuring the left cardiac border. A POCUS revealed a large cardiac tamponade.
- A CT C/A/P -dominant necrotic anterior mediastinal mass measuring 11 x 10 x 12cm with a mass effect on the adjacent vasculature, mediastinal and prominent supraclavicular and paratracheal lymphadenopathy, largest measuring 2.5cm & 1.8cm.
- Serosanguinous fluid- Pericardiocentesis- 808 cc and a right-sided thoracentesis-375 cc. Repeat thoracentesis the next day drained 300 cc of serosanguinous fluid.
- Percutaneous ultrasound guided coaxial core needle biopsy of the mediastinal mass confirmed thymic carcinoma, staged IVb (NCCN guidelines the presence of malignant cells in the pericardial/pleural fluid).
- Daily radiations (60-70gy, 10 fractions in total)+ concurrent chemotherapy (weekly dose reduced carboplatin [AUC 2]-paclitaxel [100 mg]).
- Next-generation sequencing and programmed death ligand 1 [PD-L1] receptor evaluation showed TPS 90% positive.
- Immune Check Point Inhibitor Therapy- Pembrolizumab 200 mg IV for maintenance.
- Follows with Palliative for symptom management.

## IMAGES

### PRE-TREATMENT Images & Histopathology

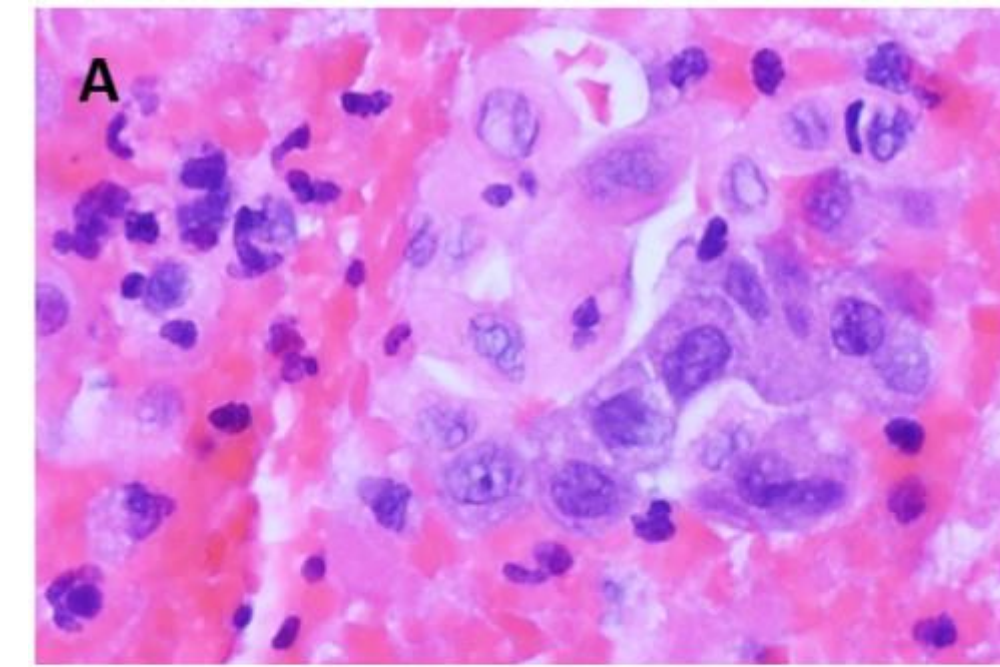


Figure 1. A) Rare clusters of tumor cells show eosinophilic cytoplasm suggestive of squamous differentiation (H&E, 400x) B) Most malignant clusters appear less well differentiated, with high nuclear:cytoplasmic ratios and indistinct cell borders.

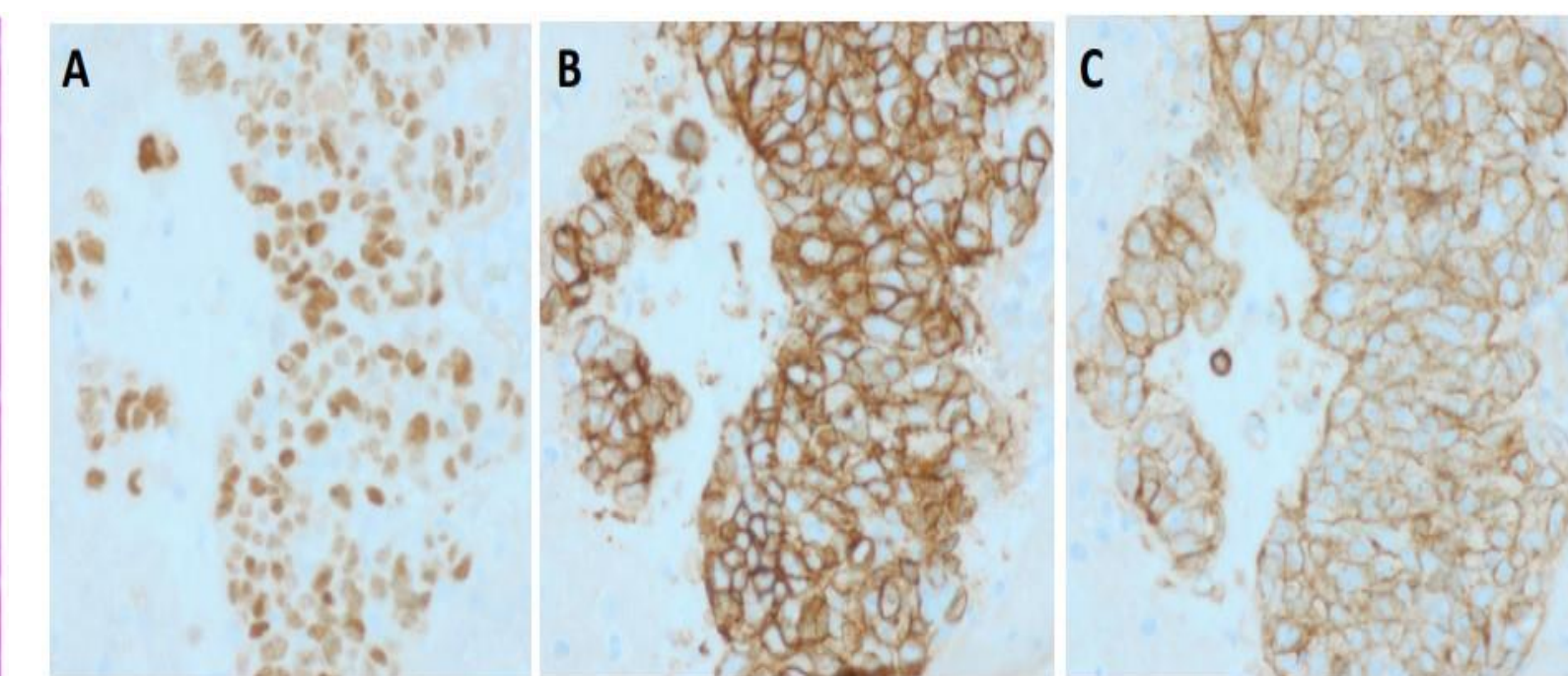
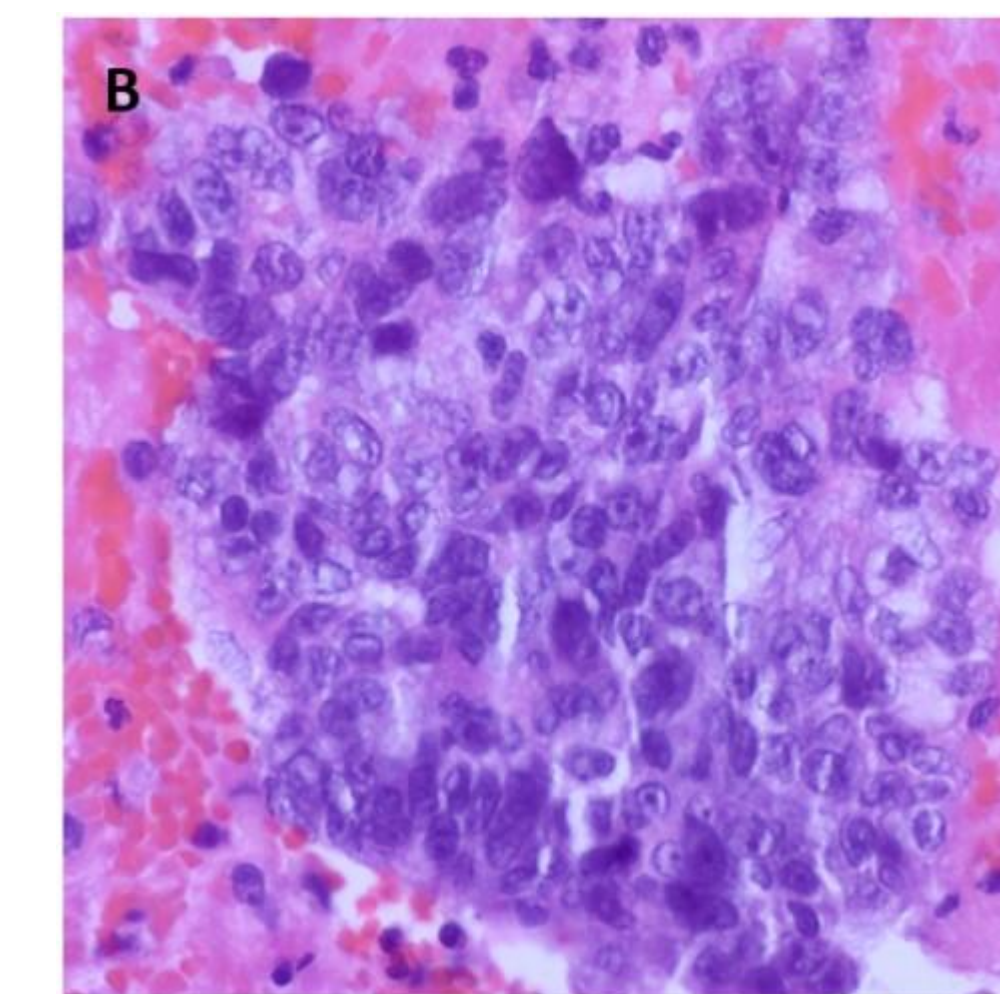
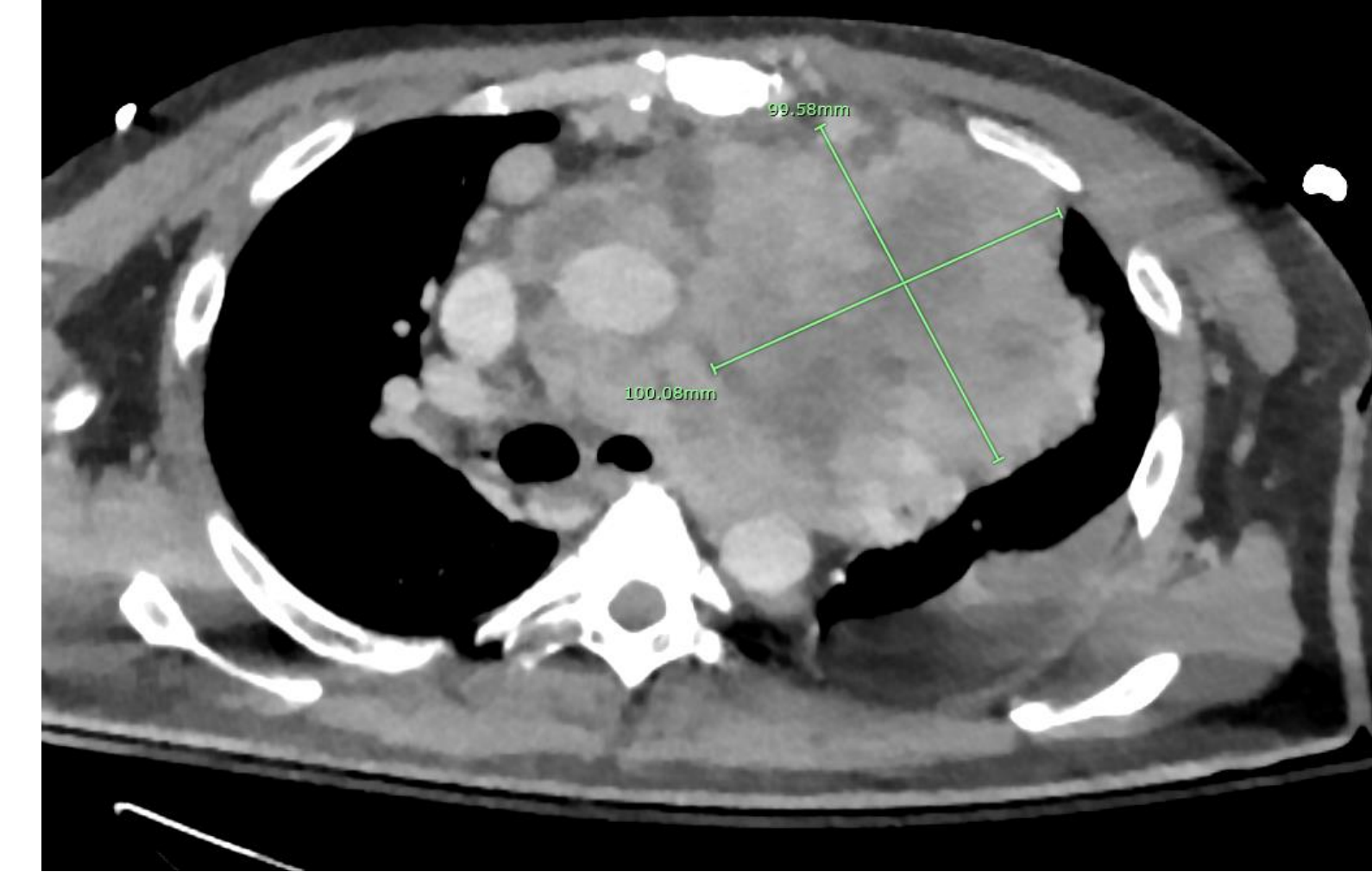
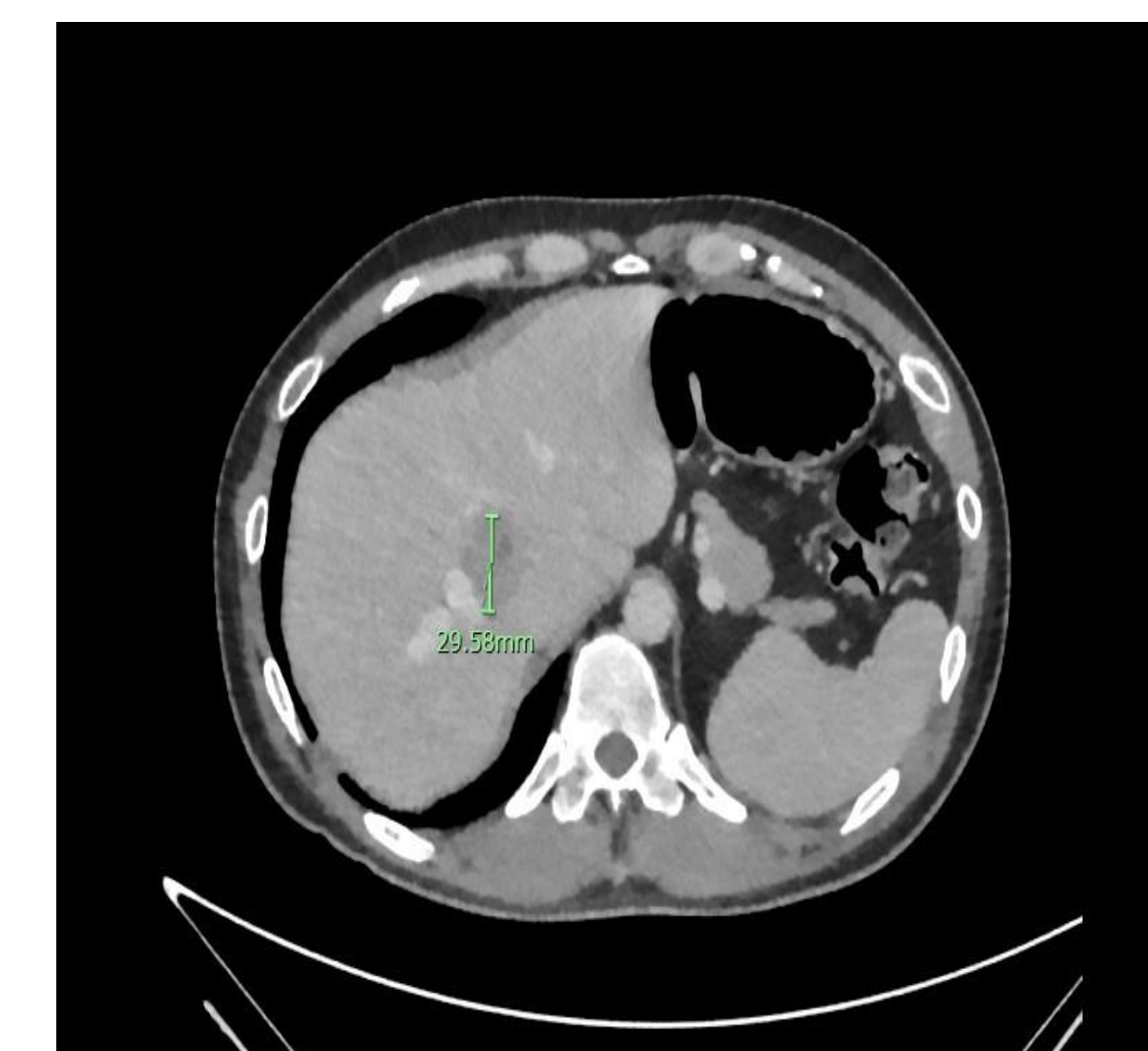
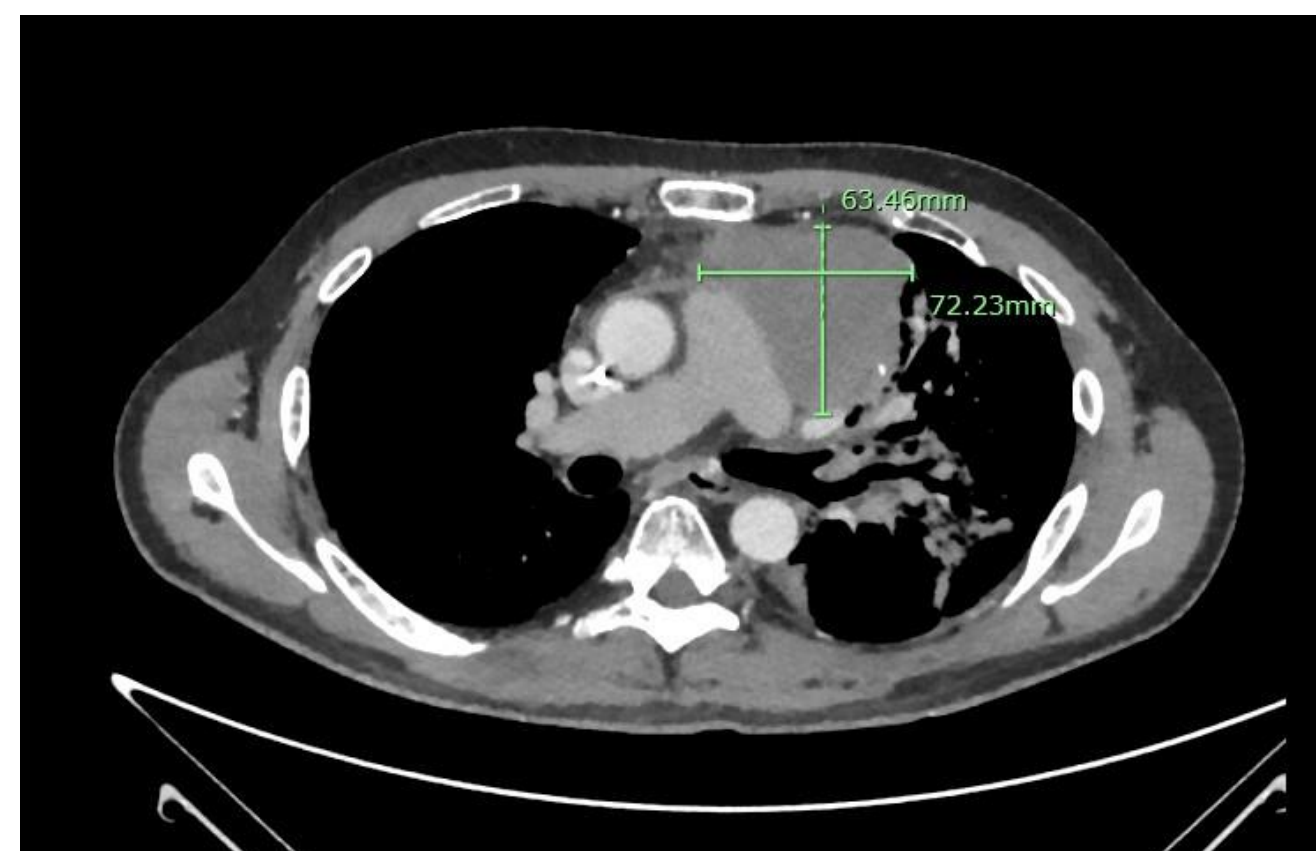


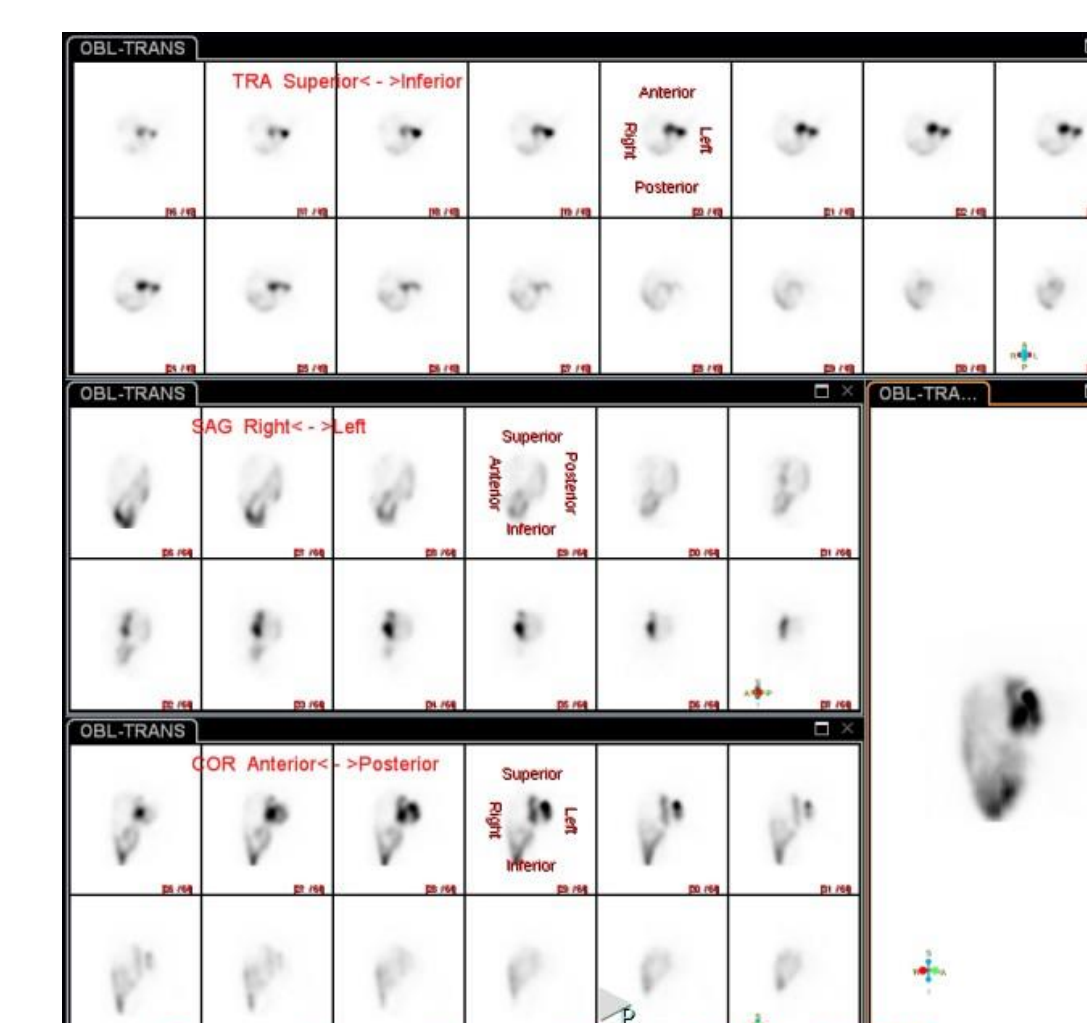
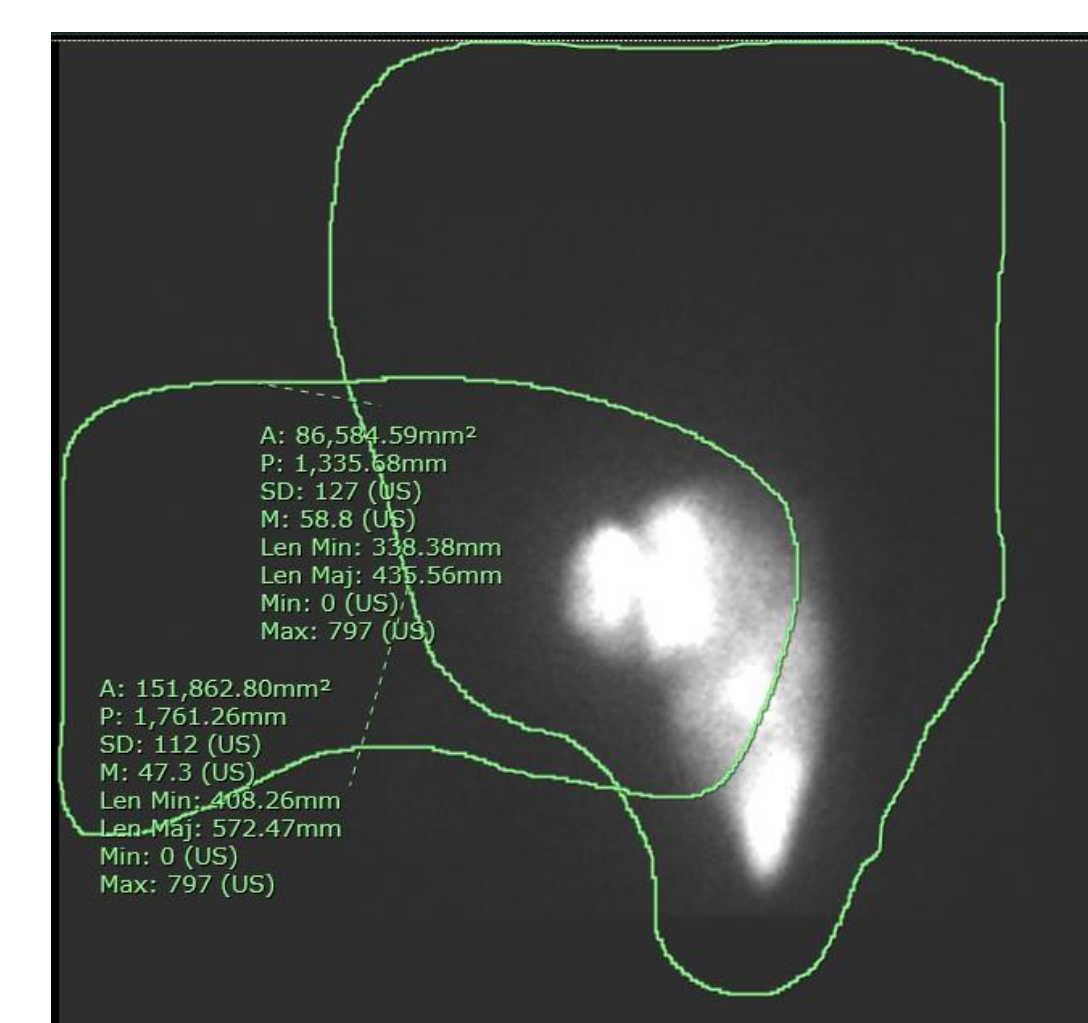
Figure 2. Immunohistochemical staining of the cell block shows positive expression of A) squamous differentiation marker p40 and thymic markers B) CD117 and C) CD5 (400x magnification).

## CASE UPDATES

### POST TREATMENT images showing reduction in size of the thymic mass and liver metastasis



### NUCLEAR MEDICINE SCAN for liver mapping, for Y90 treatment



## POST TREATMENT COURSE

- Month 3 -CT C/A/P- The tumor had reduced in size measuring 9.6 x 7.5 x 6.9 cm, mediastinal lymphadenopathy had reduced, and the right paratracheal lymph node measured 1.2cm. The upper lobes and superior segments of the lower lobes of the lung showed post radiation changes.
- Month 4- dermatitis and colitis secondary to immunotherapy but resolved by holding pembrolizumab and treatment with steroids.

## DISCUSSION & CONCLUSION

- Visceral crisis includes severe organ dysfunction as assessed by signs, symptoms, lab studies resulting from rapid progression of disease.
- When a chest CT scan shows mediastinal mass, a high index of suspicion for malignancy should be present.
- Although tumor excision is usually the first treatment of choice for thymic carcinoma, treatment can be personalized or tweaked on a case-by-case basis.
- Epithelial carcinomas are radiosensitive.
- It is best to start treatment with radiation specifically in visceral crisis as this will yield satisfactory results and resolve any symptoms.

## CASE UPDATES

- Month 7- CT C/A/P- Decrease in size of thymic cancer measuring 6.3 x 7.2 x 7.5 cm noted. New hypodense lesion measuring 2.4 x 3.4 cm in the right lobe of the liver noted.
- Month 8- Nuclear medicine liver SPECT scan-multiple areas of nodular radiotracer uptake noted.
- Y90 radioembolization of the right hepatic lobe after diagnosis of liver metastasis.

## REFERENCES

- [https://www.nccn.org/professionals/physician\\_gls/pdf/thymic.pdf](https://www.nccn.org/professionals/physician_gls/pdf/thymic.pdf)
- Girard N, Ruffini E, Marx A, et al. Thymic epithelial tumors: ESMO clinical practice guidelines for diagnosis, treatment, and follow-up. *Ann Oncol.* 2015;26:v40-v55
- <https://www.clinicsinoncology.com/open-access/pmultiple-liver-metastases-from-carcinoma-of-the-thymus-treated-with-yttrium-90-radioembolization-glass-microspheres-clinical-dosimetryp-1194.pdf>