

# A Case for the Use of Immunotherapy Treatment in Malignant Pheochromocytomas/Paragangliomas

Robin R Rodriguez, MD, MBA, Saleha Rizwan, MD, Khaled Alhamad, MD, & Gene G Finley, MD



## Introduction

Pheochromocytomas (PHEOS) are a subset of the paragangliomas (PGLs) which are a rare group of neural crest cell derived tumours. It is estimated that 2-8 people out of 1 million will be diagnosed yearly<sup>2</sup>. Out of these cases, malignant PHEOs are even more rare and make up around 10% of all PHEO cases with up to 25% of PGLs being considered malignant<sup>1,3</sup>. At present, treatment for these neuroendocrine tumours has been limited to surgical resection, radiologic, or chemotherapeutic techniques with no standard of care for malignant cases<sup>3</sup>. However, increasing research is being conducted on the efficacy of immunotherapy (IO) in the maintenance treatment of malignant PHEOs and other related PGLs<sup>4</sup>.

## Case Report

- 60 year old Caucasian female presented to PCP for pharyngitis
- Incidental murmur led to ECHO and CT scan revealing left sided renal mass
- Biopsy demonstrates nonfunctional pheochromocytoma
- Initial tumor measurement was 18.7 cm



Figure 1: Initial CT scan



Figure 2: CT restage IO x 8 months

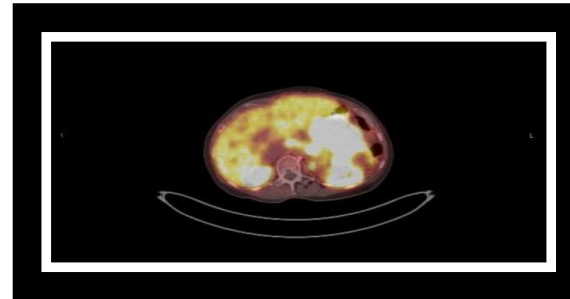


Figure 3: Initial PET

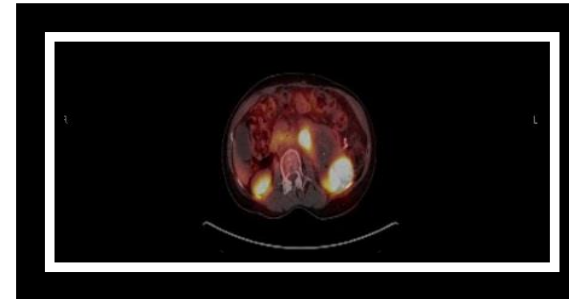


Figure 4: PET restage IO x 18 months

## Clinical Course

- Initially ineligible for radiation therapy due to tumor size
  - Patient begins to experience pain related to tumor
- Started on Octreotide LAR and oral Temozolomide
  - Hospitalized for hepatic encephalopathy
- Temozolomide discontinued
- Started on off label ipilimumab and nivolumab along with Octreotide LAR
  - Repeat PET demonstrates decreasing tumor size to 15.8cm
- Patient stable on IO therapy for  $\geq 20$  months
  - Repeat PET and CT continue to demonstrate decreased tumor size
  - Patient reports feeling better with diminished pain
- Rad-Onc reconsulted; patient eligible for radiation therapy

## Discussion

Metastatic or unresectable PHEOs/PGLs are often treated with combination chemotherapy. But a retrospective study demonstrated only a 33% response rate to chemotherapy in patients with PHEOs and an overall 5 year survival (OS) of 51%<sup>5</sup>. A meta-analysis corroborated those findings by illustrating a 37% response rate to chemotherapy use<sup>4</sup>. Alternatively, a phase II trial with IO for PHEO patients intolerable to chemotherapy demonstrated a 43% non progression rate and 75% clinical benefit rate<sup>4</sup>. These results as well as our patient's objective response along with her progression free survival of over 20 months, demonstrate the critical need to continue research in the use of IO therapy especially as there is no standard of care currently in malignant PHEO cases. Due to the use of off label IO therapy, our patient is able to receive radiation therapy and has been afforded a better quality of life.

## References

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