

# A Rare Case of Prolactin Secreting Pituitary Carcinoma with Extra-cranial Metastasis

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## Introduction:

Pituitary carcinoma can present at any age but typically presents in the third to fifth decade of life in patients with preexisting pituitary adenomas. They are rare entities that fortunately account for 0.1% of all pituitary tumours. The diagnosis of malignant lesion of the pituitary is characterized by the presence of invasion of adjacent structures and the presence of metastasis. Usually the presence of metastasis is intracranial, but cases of extracranial spread have been reported (craniospinal and/or systemic metastases). One of the biggest challenges with diagnosis of pituitary carcinoma is that from an endocrine standpoint, these tumors often behave identically to benign pituitary tumors as in our case of malignant prolactinoma. Such locally invasive and rapidly growing tumours can pose particular challenges and multimodal therapy may be required.

## Case :

- A 71-year-old gentleman presented in 2008 with bitemporal hemianopia with pituitary apoplexy compressing the optic chiasm (figure 1).
- Prolactin was **55287 mU/L**, with anterior panhypopituitarism.
- Due to visual field defect and size of lesion he underwent transphenoidal adenectomy (TSA)
- Histology was in keeping with a lactotroph adenoma with MiB-1 index of 3-5%, co expression of THS 10 % with no clinical significance and no overexpression of p53
- Post TSA Prolactin remained elevated at **35633 mU/L** and dopamine agonist therapy was commenced with initial good biochemical response.
- Visual fields recovered and Prolactin was normal until 2013.
- He re-presented in 2014 with new visual field defect and Prolactin of **32558 mU/L**, escalation of Cabergoline therapy was intended with poor results..
- He underwent debulking surgery in February 2015 due to progression and optic chiasm compression (figure 2).
- Histopathological features showed atypical pituitary adenoma (mammotroph) with very high mitotic rate and MIB-1 index 20-30% with moderate to strong nuclear staining for p53 in contrast to the previous sample from 2008. Although the presence of brisk mitotic activity suggests a higher likelihood of invasion and perhaps the eventual occurrence of metastatic spread, it is not an indicator of malignancy per se.
- The post operative MRI scan in December 2015 confirmed rapid regrowth of the tumour (figure 3) and Radiotherapy were performed.
- His Prolactin remained stable until September 2017. Slow rise in Prolactin was seen initially with no change in pituitary MRI findings.
- Between March and **May 2018** the rate of rise of the Prolactin increased and reached **65807 mU/L**. MRI in May 2018 demonstrated two large extra-axial intra-dural enhancing masses at the level of C1-C2 junction with risk of neuronal compression (figure 4).

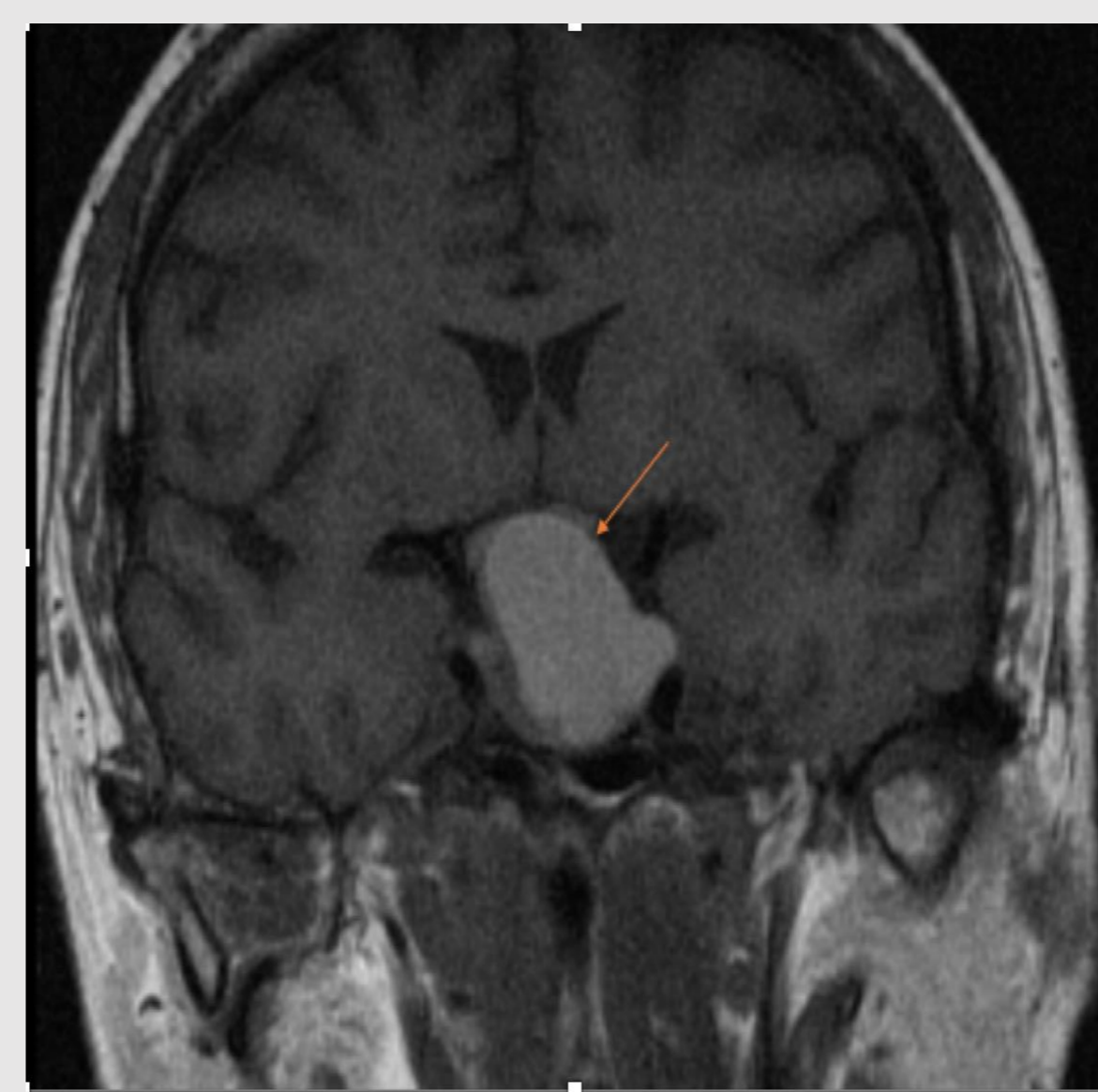


Figure 1: MRI Pituitary showing macroadenoma and optic chiasm compression

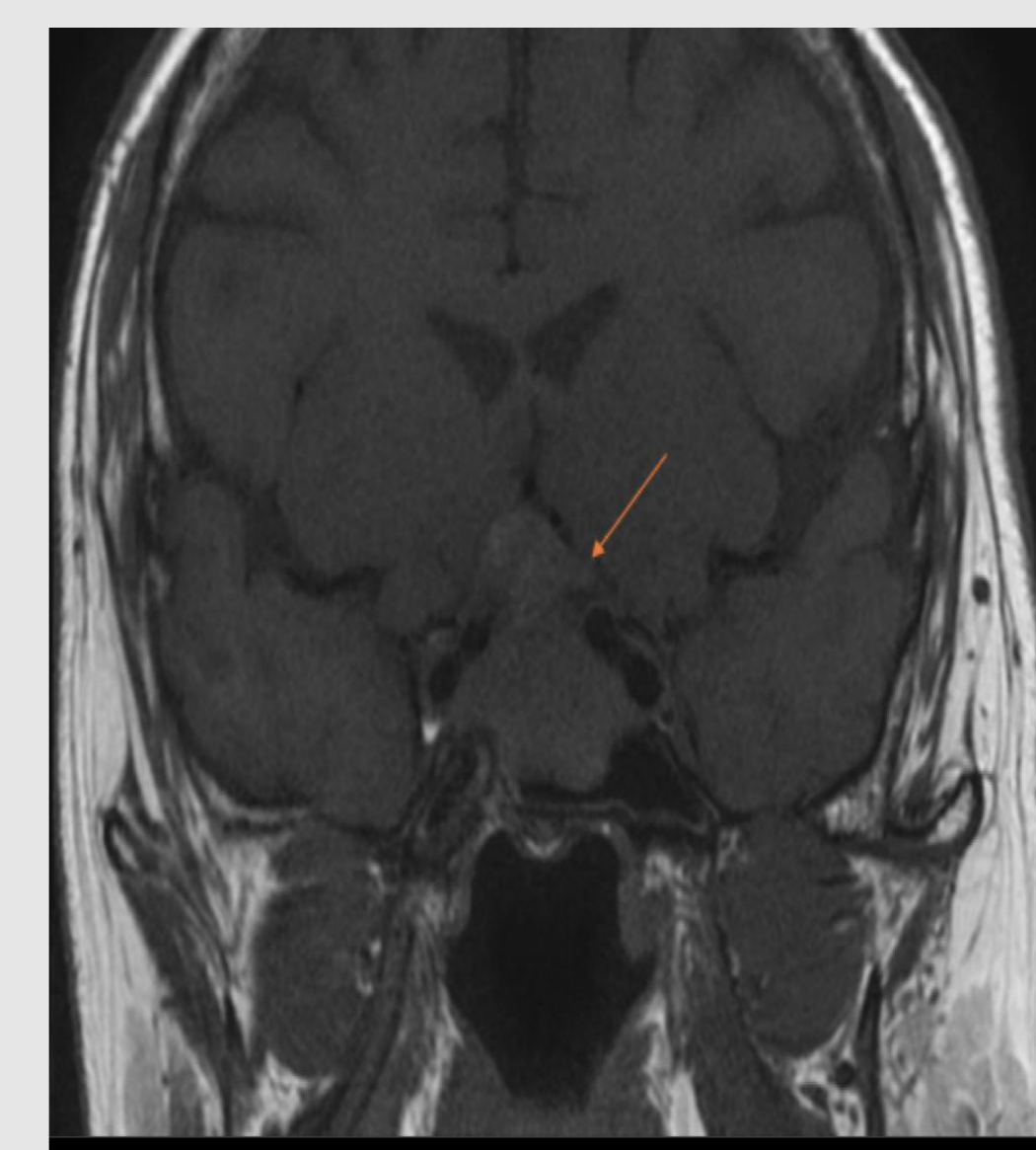


Figure 2: MRI pituitary showing progression of the residual tumour

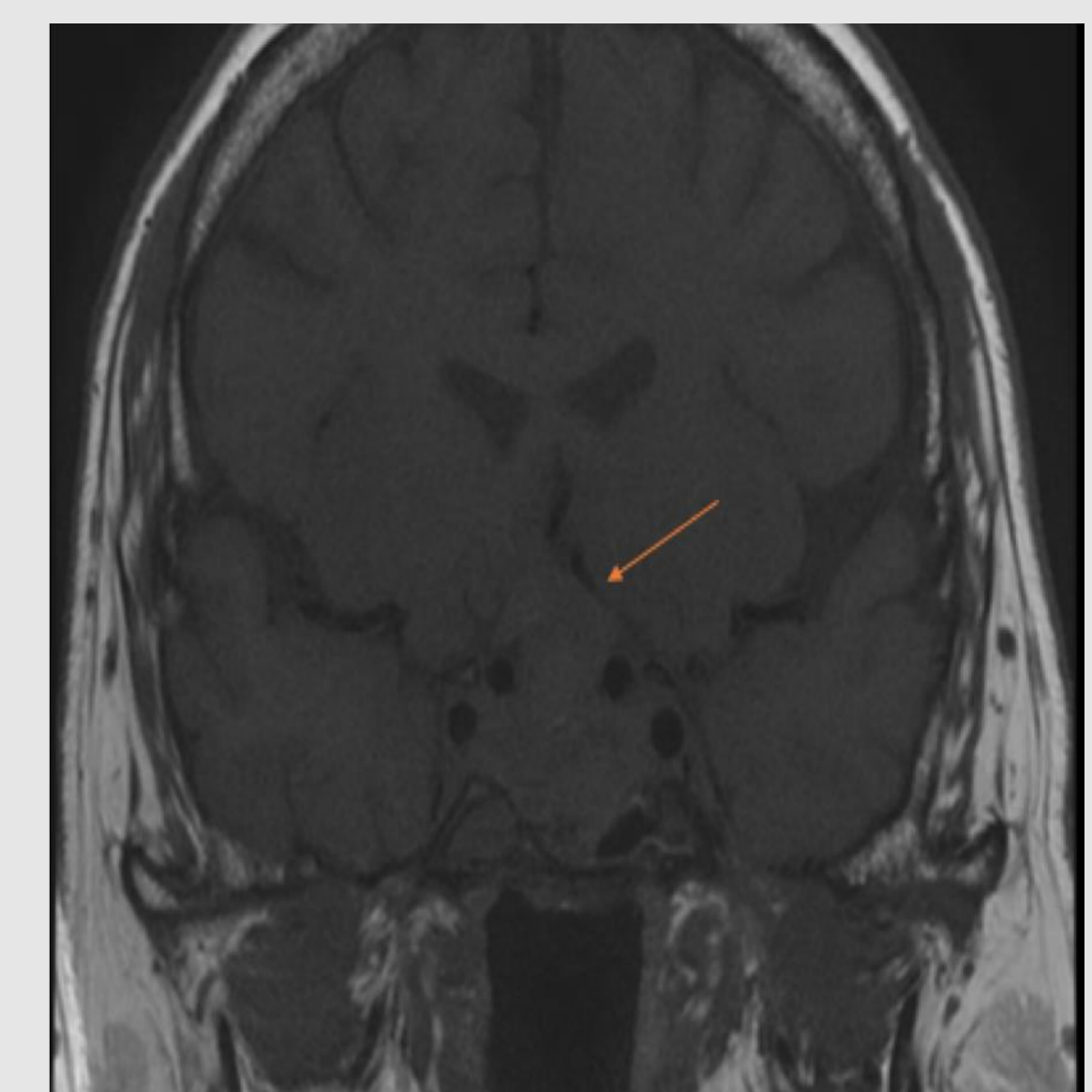


Figure 3: Post operative MRI pituitary in December 2015

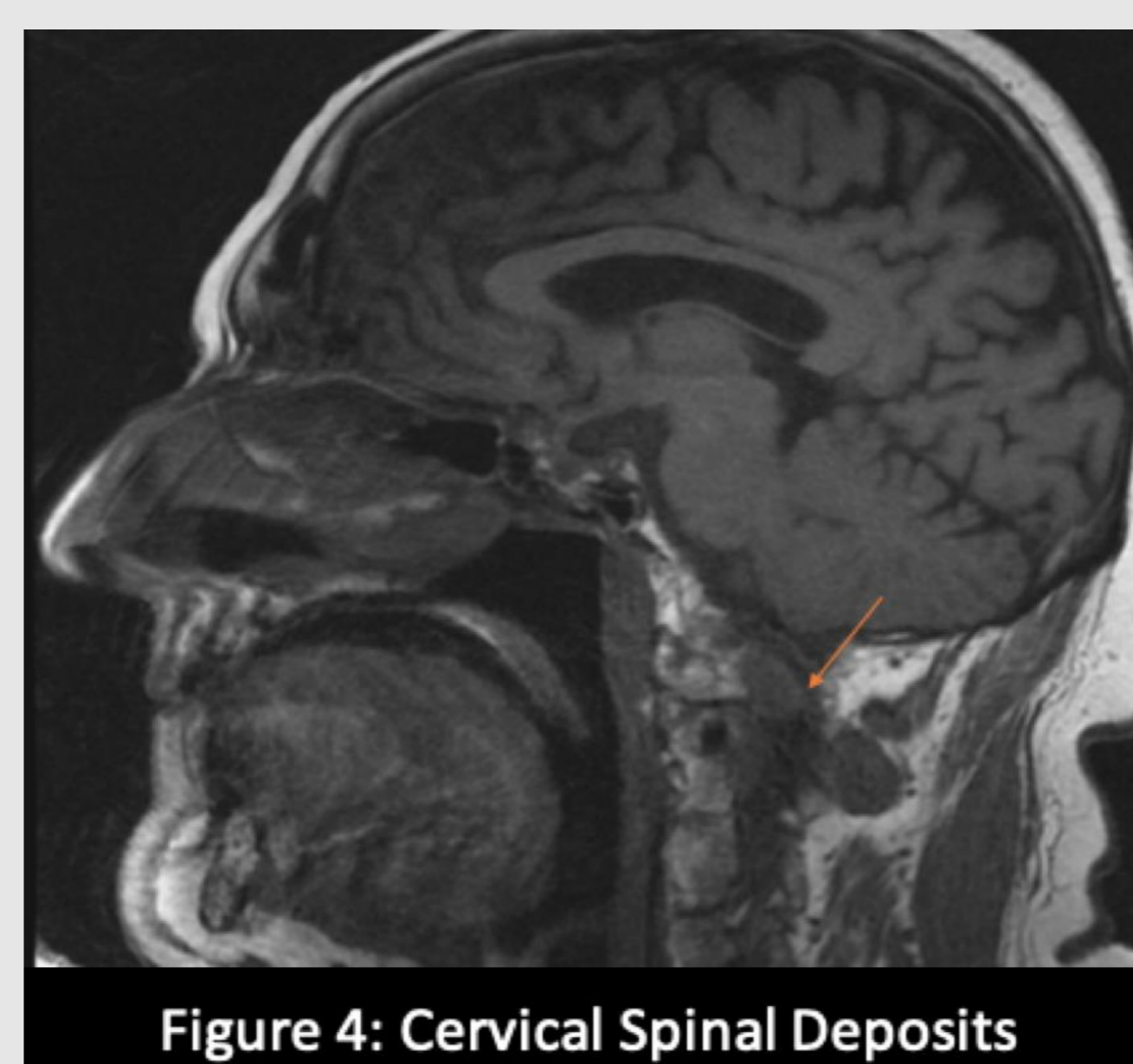
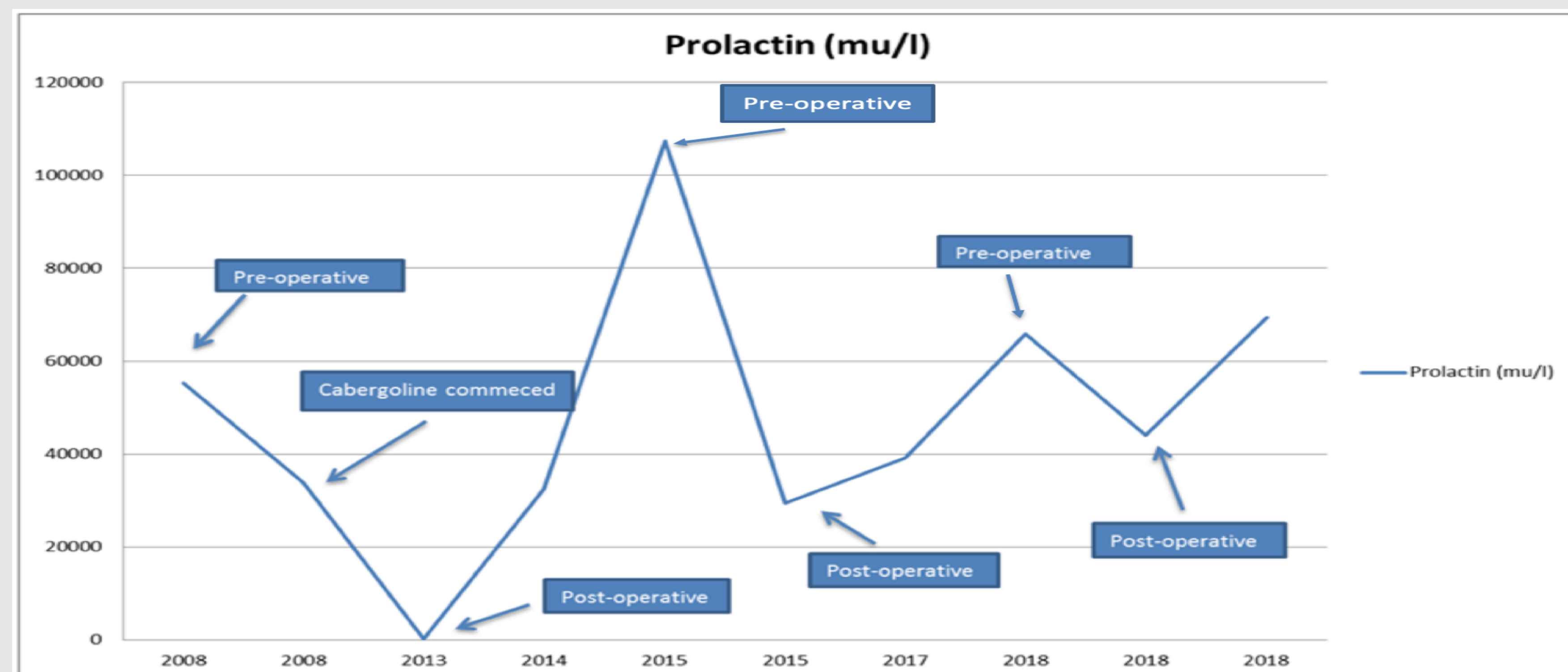


Figure 4: Cervical Spinal Deposits

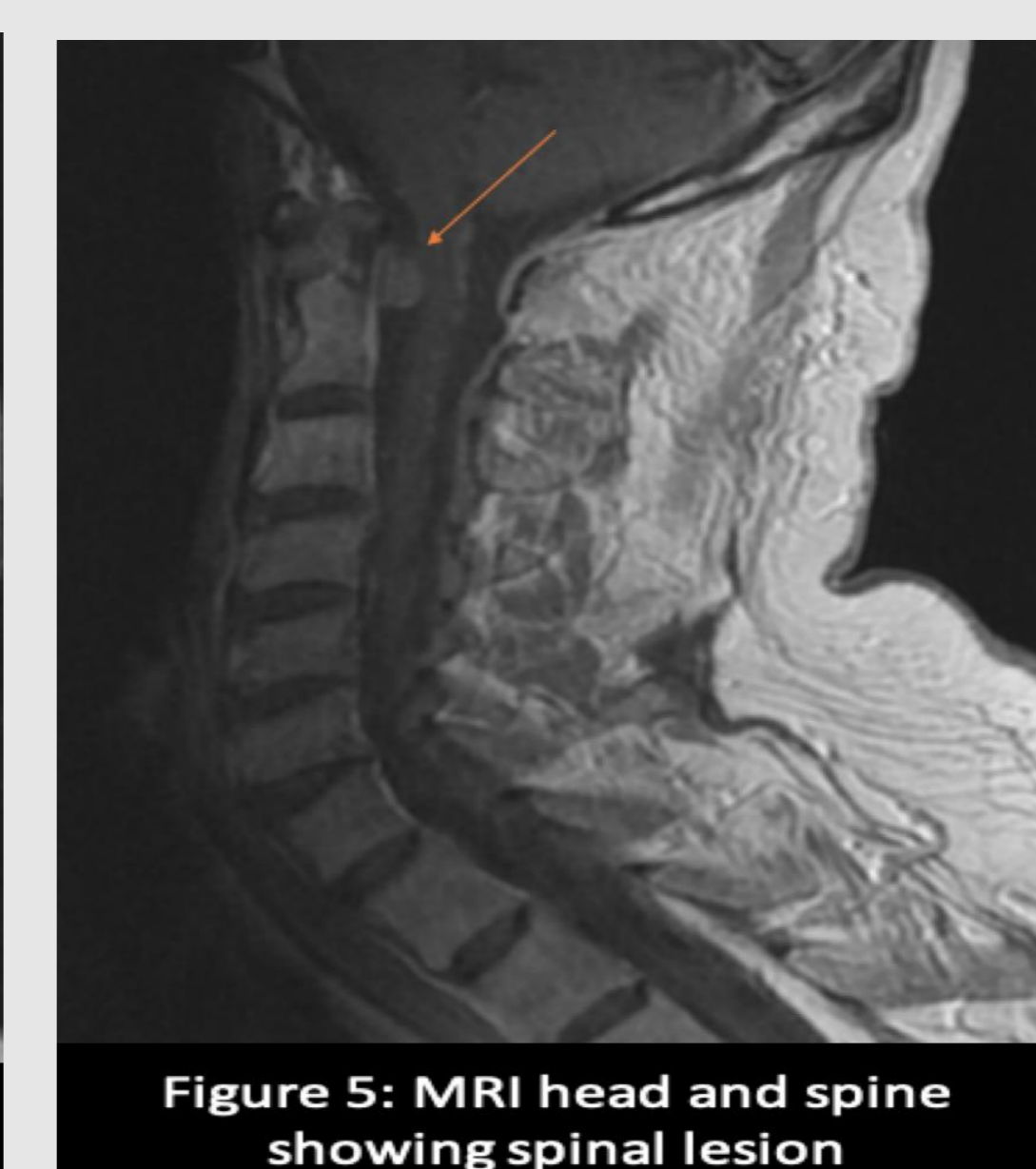


Figure 5: MRI head and spine showing spinal lesion

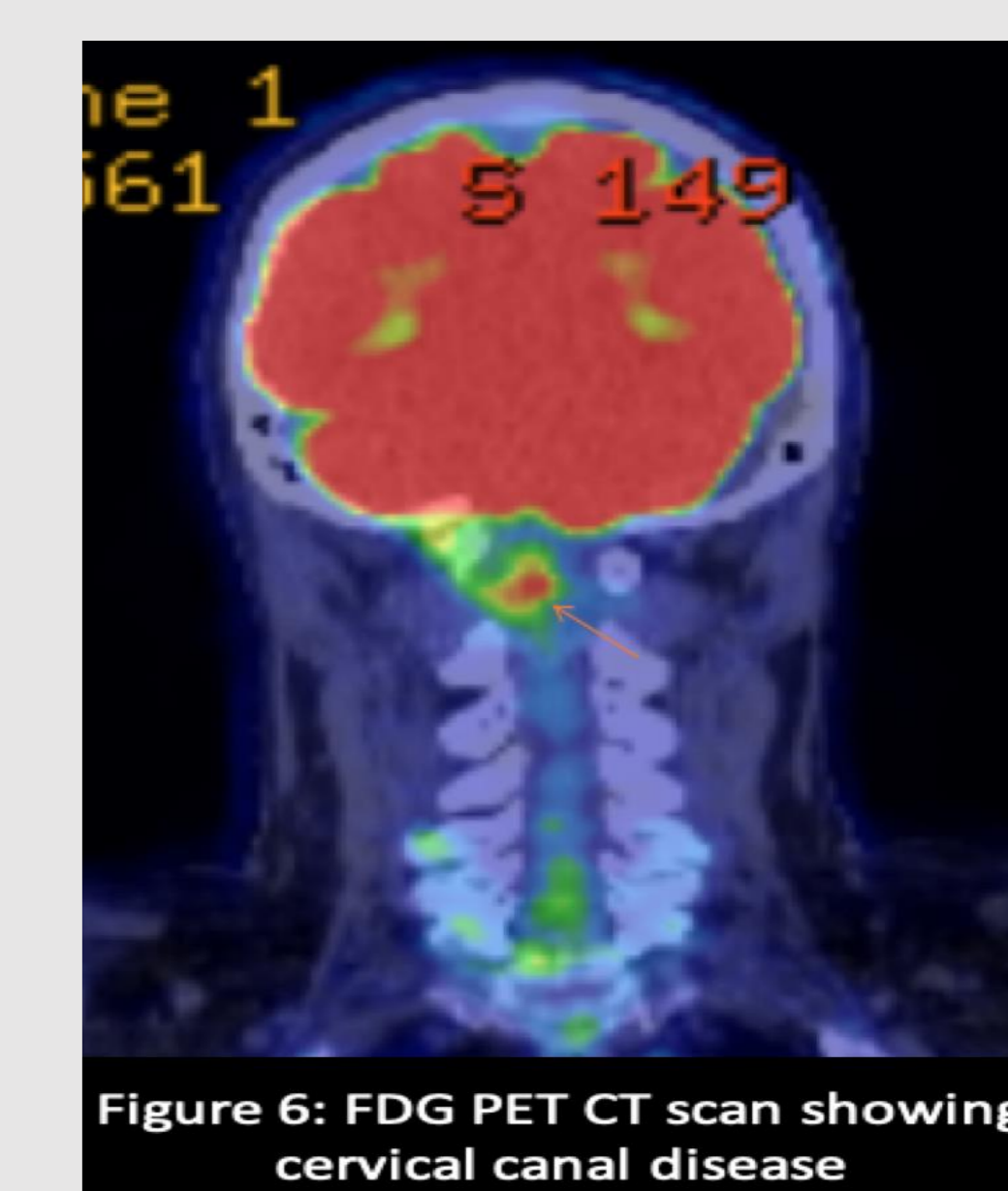


Figure 6: FDG PET CT scan showing cervical canal disease

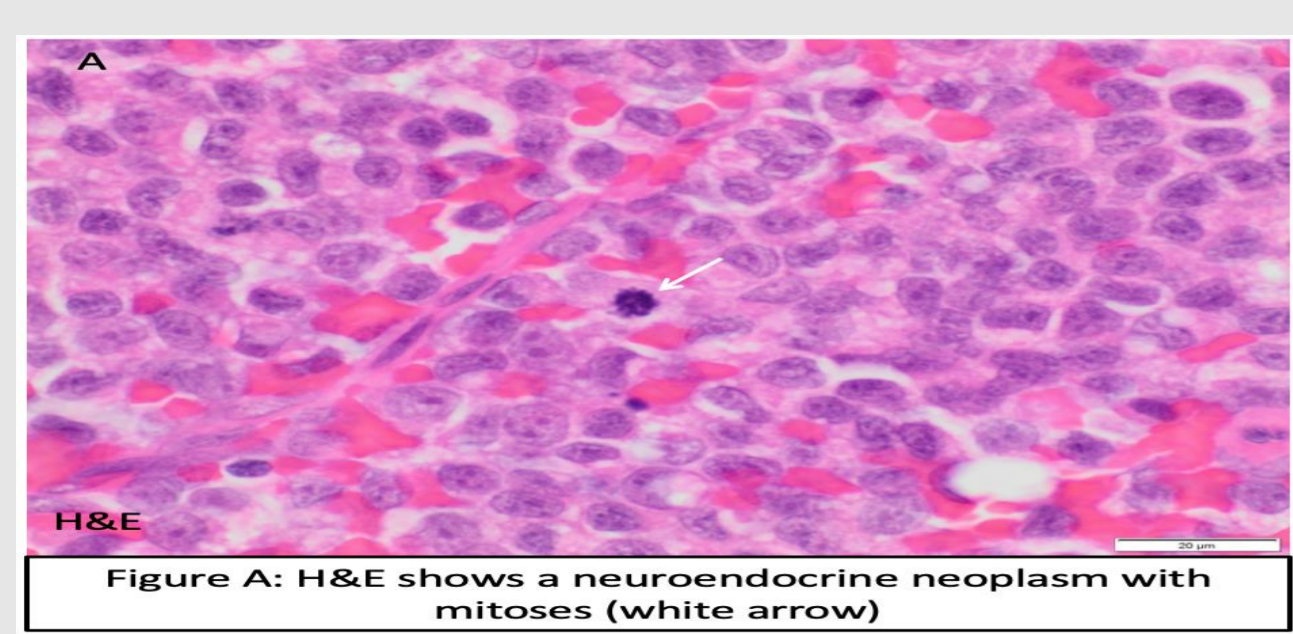


Figure A: H&E shows a neuroendocrine neoplasm with mitoses (white arrow)

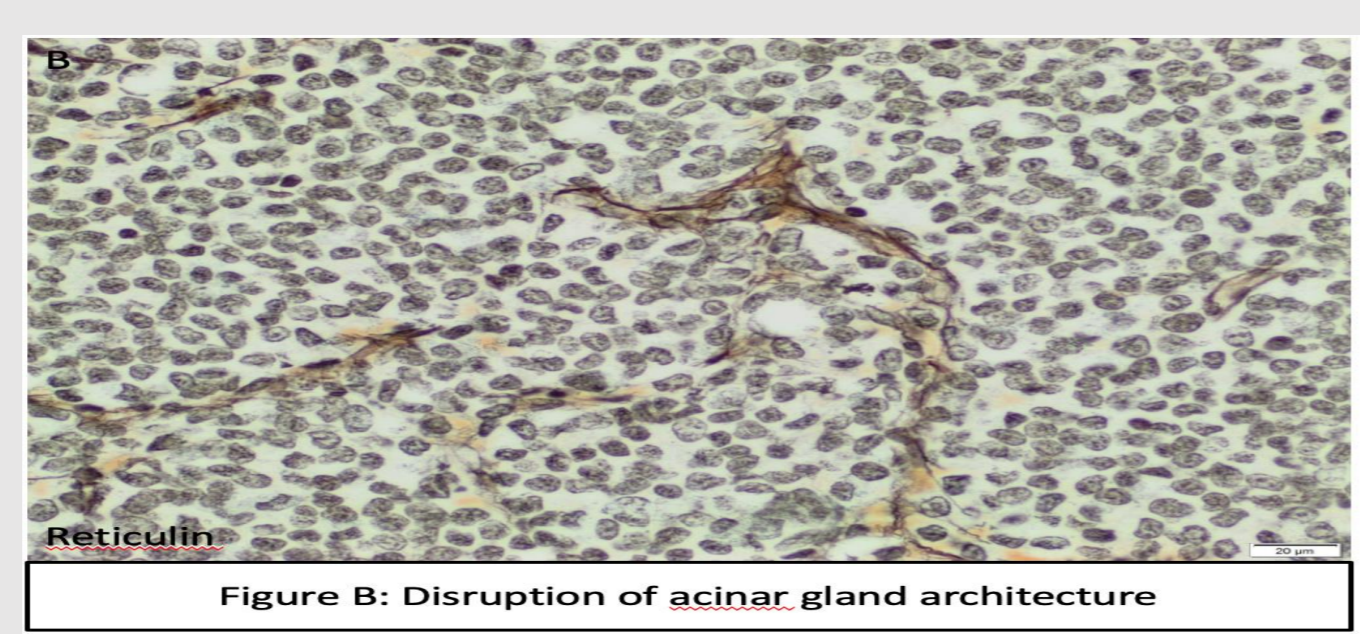


Figure B: Disruption of acinar gland architecture

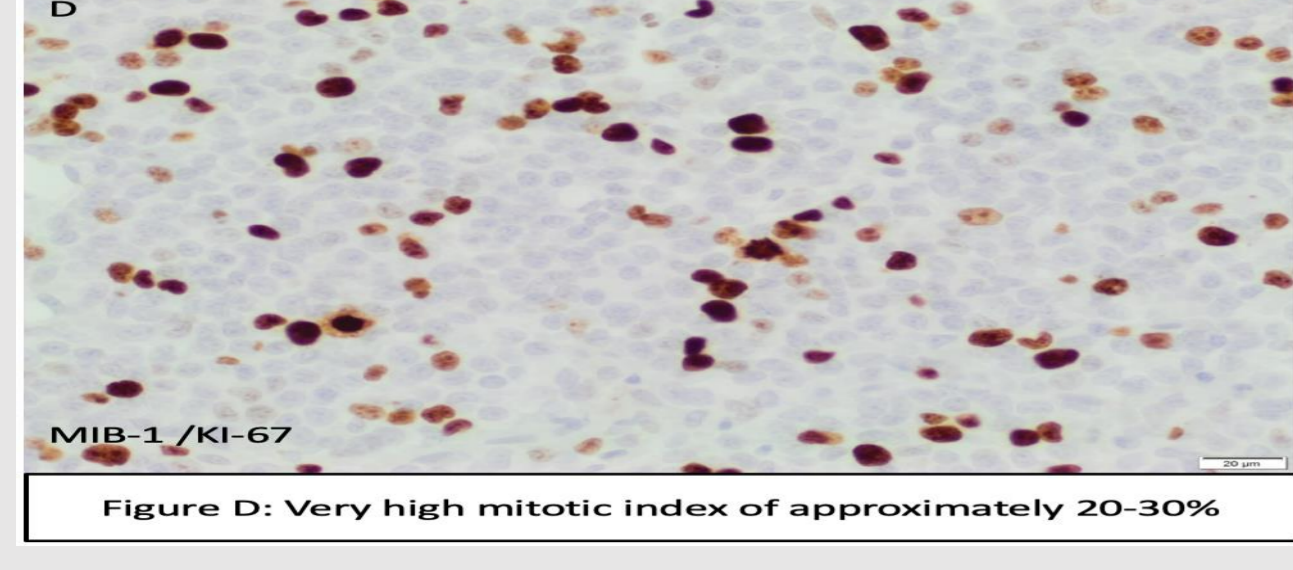


Figure D: Very high mitotic index of approximately 20-30%

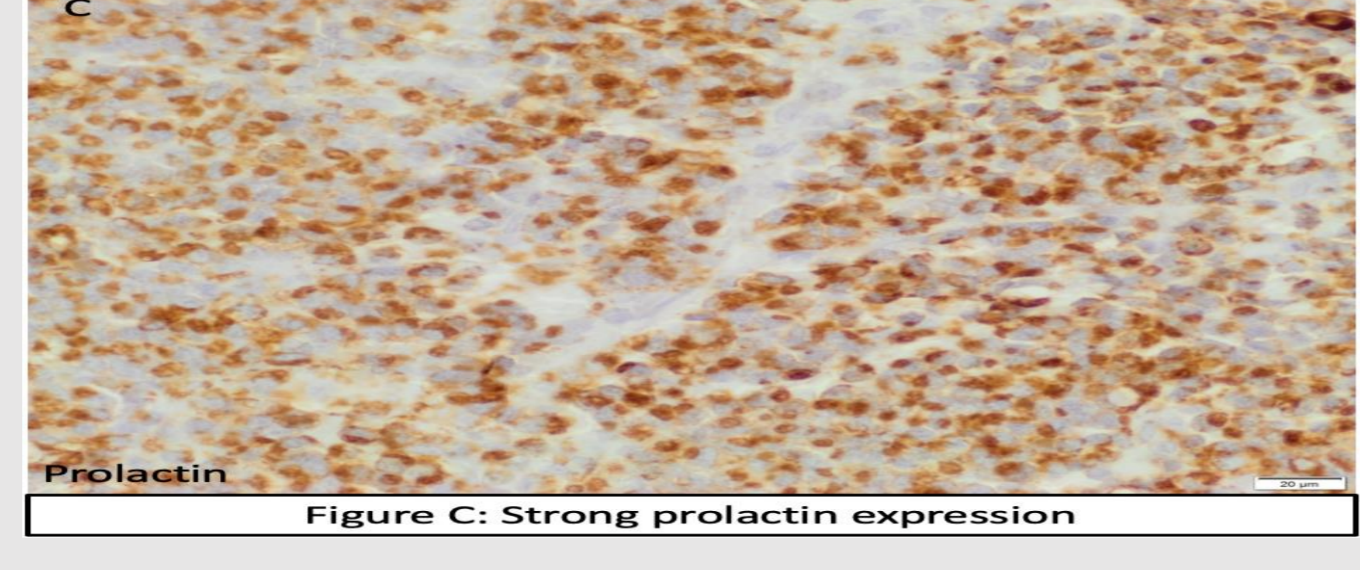


Figure C: Strong prolactin expression

## Treatment:

- The patient underwent resection of the pituitary lesion (figures A, B, C and D) and right intradural extramedullary lesion.
- Histology was consistent with a metastatic deposit with raised MiB-1(20-30%), confirming lactotroph carcinoma.
- Post operatively the prolactin level to 50460 MU/L.
- FDG PET CT scan showed moderately FDG avid cervical canal residual disease (figure 6).
- MRI head and whole spine showed multifocal spinal CSF drop metastasis (figure 5).
- Patient was underwent further radiotherapy and has commenced on Temozolomide therapy with no severe adverse effects and is awaiting follow up MRI.

## Conclusion:

This case highlights the changing course of a benign tumour to aggressive lactotroph lesion and subsequent development of metastatic disease. Secondary dopamine agonist resistance is rare and should always raise suspicion regarding the nature of the tumour. Lactotroph lesions with high MIB-1 and unusual course harbour malignant potential and warrant close follow up and timely intervention.

## References:

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