

Out of the Comfort Zone (Part 1)

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When we are normally asked to report strange masses in heads, some of us take it as an interesting challenge away from the hum drum day to day long running contest of stroke or no stroke, but when we get presented with conditions that extend out of our normal range of competencies how do we deal with this.

Here is a recent example. An 85 year old woman who has a previously diagnosed Olfactory Neuroblastoma presents from her nursing home with reduced mobility, cognitive function and weakness ? frontal lobe compression secondary to tumour. With no previous imaging available.

Well as you can see from the images this was no ordinary tumour and the images were certainly impressive, but of further considerations was the grey area for facial bone and sinus reporting. Yes we can all call on the spare anatomy textbook lying in the reporting rooms or even call up the ever helpful Dr Google. But are we all confident to report on areas of anatomy that weren't part of our CT Head Training courses? Yes the tumour invades certain sinuses, and yes certain bones appear to have been destroyed, but what impact does that have on the report to the clinician and what does that change in the patient management and treatment.

Olfactory Neuroblastomas are a rare type of tumour often called esthesioneuroblastomas, and can be very aggressive and malignant. Thought to arise from the olfactory nerve which sends nerve signals to the brain related to smell.

The tumours display a variety of imaging characteristics and aggressiveness. The expansile tendency of olfactory neuroblastoma is characterised by bowing of the sinus walls. The destructive aspect is manifested as tumour replacing the turbinates, septum, and sinus walls with extension into contiguous areas. All olfactory neuroblastomas are of homogeneous density on CT, equal to or greater than the surrounding soft tissues. Without cysts or calcifications (difficult to distinguish from residual bone). Contrast enhancement is usually moderate and homogeneous. Direct coronal images are of particular value in evaluating extension to the orbit and through the cribriform plate to the anterior cranial fossa¹.

Differential diagnosis would be a squamous cell carcinoma amongst other rarer tumours, but definitive diagnosis would be by histological sampling. The implications are far reaching, if caught early this type of tumour responds well to either radiotherapy or craniofacial reconstruction. Thus needed detailed reporting of the type of bone that has been eroded and displaced within the report. If the cribriform plate has been eroded and the tumour invades the cranium Bailey et al state the patient is at risk of meningitis², thus a thorough review of the cerebral matter and any associated oedema / compression is a clinical emergency.

The report for our patient stated ' the known large mass seen arising from the upper nasal cavity and expanding in all directions. Inferiorly there is destruction of the nasal septum and the ethmoid air cells with a mass in the nasal cavity, particularly on the left side where there is considerable expansion. The nasal expansion is compressing both orbits. The mass is invading the frontal sinuses and tumour is also seen in the sphenoid. Superiorly the mass is invading the frontal lobes bilaterally with some surrounding oedema. The anterior bony defect noted could be post surgical'.

1. Pickuth, D., S. H. H. E. Öbrunner, and R. P. Spielmann. "Computed tomography and magnetic resonance imaging features of olfactory neuroblastoma: an analysis of 22 cases." *Clinical Otolaryngology & Allied Sciences* 24, no. 5 (1999): 457-461.

2. Bailey, Byron J., and Stuart Barton. "Olfactory neuroblastoma: Management and prognosis." *Archives of Otolaryngology—Head & Neck Surgery* 101, no. 1 (1975): 1.



