

## Peri-operative management of patients with neuroendocrine tumours

|   | Surgical / interventional Radiology procedure not related to tumours                    | Minor procedure (surgery, biopsy, ablation) to primary tumour                            | Major surgery / TAE on metastatic deposits or bulky primary tumour                       |
|---|---|--|--|
| <b>Non-functioning NET</b>  | No Octreotide required  | No Octreotide required   | Octreotide 100ug IV On induction   |
| <b>History carcinoid syndrome Well controlled on SSA</b>                | No Octreotide required  | Octreotide 100ug IV On induction   | Octreotide 12.5ug/hr IV infusion 8-12 hours pre-operatively, 12-24 hours post procedure  |
| <b>Active carcinoid syndrome Frequent symptoms despite SSA</b>          | Octreotide 100ug IV On induction  | Octreotide 12.5ug/hr IV infusion 8-12 hours pre-operatively, 12-24 hours post procedure  | Octreotide 25ug/hr IV infusion 24 hours pre-operatively, then 24-48 hours post procedure |
| <b>Active carcinoid syndrome Symptomatic/ significant heart disease</b> | Octreotide 12.5ug/hr IV infusion 8-12 hours pre-operatively, 12-24 hours post procedure | Octreotide 25ug/hr IV infusion 24 hours pre-operatively, then 24-48 hours post procedure | Octreotide 50ug/hr IV infusion 24 hours pre-operatively, then 72 hours post procedure    |

Octreotide 12.5ug/hr - octreotide 300ug in 250mls of 0.9% saline. Run at 10mls/hr.

Octreotide 25ug/hr – octreotide 600ug in 250mls of 0.9% saline. Run at 10mls/hr.

Octreotide 50ug/hr – octreotide 1200ug in 250mls of 0.9% saline. Run at 10mls/hr.

Regardless of chosen regimen: if signs of carcinoid syndrome (dry flushing, tachycardia, hypotension and wheeze caused by release of serotonin from tumours) are observed the patient should be given bolus octreotide 100mcgs IV to be repeated as required: this is the mainstay of treatment (continue or start background infusion 50mcg/hr).

If haemodynamic instability is encountered support from critical care/ICU should be requested urgently.

**Drugs to consider using in a carcinoid crisis:**

Hydrocortisone, ranitidine, chlorpheniramine (reduce histamine release)

Hypotension: IV fluids; consider phenylephrine, noradrenaline or vasopressin

Hypertension: optimise analgesia and anaesthesia (fentanyl/ propofol), consider magnesium or GTN infusion in acute setting

**AVOID DRUGS THAT CAUSE HISTAMINE OR SEROTONIN RELEASE:** thiopentone, suxamethonium, atracurium, morphine, tramadol, dopamine, isoprenaline

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There has been very little good research into peri-operative management of patients with functional neuroendocrine tumours releasing carcinoid hormones. Studies that have been done differ in their definition of what constitutes an intra-operative carcinoid crisis (mainly through differences in duration of hypo/hypertensive episodes). This has resulted in differences in opinion over benefit of peri-operative octreotide in preventing carcinoid crises.

Anaesthetists should be prepared for carcinoid crisis even in patients on octreotide prophylaxis.

Carcinoid crisis can very rarely occur in patients without prior history of carcinoid syndrome on induction of anaesthesia.

### References

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2. Condrón ME, Pommier SJ, Pommier RF. Continuous infusion of octreotide combined with perioperative octreotide bolus does not prevent intraoperative carcinoid crisis. *Surgery* 2016;159:358-67
3. Kinney MAO, Warner ME, Nagorny DM, et al. Perianaesthetic risks and outcomes of abdominal surgery for metastatic carcinoid tumours. *British Journal of Anaesthesia* 2001; 87(3):447-52
4. Castillo JG, Filsoufi F, Adams DH, et al. Management of patients undergoing multivalvular surgery for carcinoid heart disease: the role of the anaesthetist. *British Journal of Anaesthesia* 2008; 101(5): 618-26