Management of Oncological Emergencies

Disclaimer: This is not clinical advice, these are a set of notes I made for myself while revising for Oncology interviews – please use your clinical judgement in your workplace and do not rely on this as guidance. Thank you.

I have mostly made notes from the ESMO Handbook of Clinical Emergencies – this is a fantastic resource and I would recommend this book to anyone. I have updated the outdated information using UK based resources – NICE guidelines as well as local guidelines.

Superior Vena Cava Obstruction

1. Look for causes – inflammatory/benign.neoplastic
2. Assess Neurology early – cerebral oedema signs may be subtle!
3. CXR: mediastinal widening/masses
4. CT/MRI: can assess level and underlying pathology including tumour mass size. Also assess SVC diameter and length of stenosis of obstruction, evidence of thrombus and collateral formation.
5. Treatment in the acute decompensated physiologically unstable patient – stabilize and support + immediate endovascular stenting. In Mesothelioma, effective treatment approaches limited therefore more suitable for stenting however SCLC (small cell lung cancer), lymphoma and germ cell tumours more chemosensitive so other options worth considering.
6. Sub-acute presentation – focus on obtaining tissue diagnosis if malignant, can be bronchoscopy, endobronchial ultrasound, mediastinoscopy, fine needle aspiration (FNA) or CT guided biopsy. MDT discussion with a view to planning.
7. Radiotherapy: 90% experience major relief in 1 week, can be used for sensitive tumours including lymphomas, small and non-small cell lung cancers
8. Surgery: limited role
9. Minimal evidence for steroid benefit in this case however may help with inflammation due to glucocorticoid activity – 16mg PO OD initially followed by 8mg PO BD. Reduce if no clinical benefit and taper in patients who respond.

Neutropenic Sepsis

1. Sepsis SIX – antibiotics early, oxygen, lactate (ABG), urinary catheter (input/output monitoring), intravenous fluids, blood cultures (peripheral and line)
2. Establish escalation plan early and communicate to patient and family – liaise with other specialities (critical care) in case of ambivalence
3. Check all sources – urine, abdomen, chest, pharynx, ears, skin, brain, indwelling lines. Also think viral or fungal infections.
4. Calculate MASCC (Multinational Association of Supportive Care in Cancer) score with a view to risk-stratifying these patients and instituting inpatient vs outpatient treatment. Always discuss with a senior clinician in charge if concerned.
5. Consider G-CSF therapy if profound neutropenia or recent chemo – risk vs benefit needs to be decided based each individual case. Usually given when neutrophils <0.5 or <1.0 with signs of severe sepsis
6. Doses: Filgastrim 300mcg SC (<90kg) and 480mcg SC (>90kg)
7. Lenogastrim: 150mcg/m^2 OD by SC injection – vial sizes 105mcg and 263mcg.

Metastatic Spinal Cord Compression

1. Thorough neurological assessment as well clinical history to establish onset as well as level of compression, do not forget cervical spine!
2. Spinal percussion: easy to perform, similar to percussion elsewhere. Percussion of the thoracic and lumbar spine should trigger pain in patients with serious back pain pathology, such as vertebral malignancy or a spinal infection. Because bone conducts vibration extremely well, percussion irritates deep space pathology. In contrast, percussion should not exacerbate discogenic pain, back strain, or muscular spasm.
3. Good evidence for steroids, radiotherapy (external beam radiotherapy as well as stereotactic body radiation therapy) and surgery. Patient selection very important therefore detailed history essential to determine performance status.
4. Unless there is a strong contraindication (suspected lymphoma – corticosteroids may be cytotoxic to lymphoma cells leading to false negative biopsy results) proceed to give 16mg PO OD dose of Dexamethasone followed by 16mg PO daily (can be 8mg PO BD divided doses) with PPI cover. Steroids must be continued till surgery or radiotherapy. Can be weaned down gradually over 5-7 days after therapy. If there is neurological deterioration, consider dose increase temporarily.
5. Pain control: Follow WHO pain ladder, involve Palliative Care team.
6. Bisphosphonates: "Offer patients with vertebral involvement from myeloma or breast cancer bisphosphonates to reduce pain and the risk of vertebral fracture/collapse. Offer patients with vertebral metastases from prostate cancer bisphosphonates to reduce pain only if conventional analgesia fails to control pain." **(NICE Clinical Guideline CG75)**
7. Surgery: Surgery should be first line in patients with good performance status who do not meet any exclusion criteria – discuss early with Spinal/Neurosurgical team.
8. Radiotherapy: Radiotherapy is second line if surgery not possible due to any reason. Even patients who are not for treatment should be offered 8Gy Palliative radiotherapy.
9. Ensure patients are nursed flat till there is no evidence of spinal instability or risk of cord damage. This is a risk that must not be taken. Pay special attention to bowel, bladder continence as well as the presence of spinal shock.
10. Focus on thromboprophylaxis, physiotherapy (once suitable) and patient's mental health too. This can be a devastating diagnosis.
11. Decompressive surgery followed by RT may have better outcomes than RT alone in selected patients – radioresistant primary tumours, displacement of spinal cord on MRI, a single area of cord compression, loss of motor function less than 48 hours or estimated survival longer than three months.
12. Chemotherapy: sensitive tumours like Hodgkin's lymphoma, non-hodgkin's lymphoma, germ cell tumours and breast cancer may be treated with a combination of RT and systemic chemotherapy. Hormonal treatment may also play an important role in the management hormone sensitive breast and prostate cancers.

Complications of Brain Metastases

1. Dexamethasone initial daily dose is 12mg to 16mg PO OD. The steroid dose should be reduced when possible and used "as much as needed, as little as possible".
2. Seizures: 70% of patients experience epileptic seizures however prophylactic treatment is not recommended. Seizures should be treated as and when they arise however this can be at the discretion of the treating physician. Non-enzyme inducers like Levetiracetam are preferred.
3. Bleeding: CT or MRI should be performed to diagnose and corrective measures like Vitamin K, platelet transfusions should be instituted. All cases should be discussed with the Neurosurgical team unless no realistic chance of recovery from a large intracranial event in which case the Palliative care team should be involved.
4. Leptomeningeal Carcinomatosis: May occur with brain mets in 50% - 80% of patients. Look for signs of meningeal irritation like photophobia, cranial nerve palsies, nuchal rigidity. Diagnose using lumbar puncture to detect malignant cells by CSF cytology + MRI.

Hypercalcaemia **(Ref: St. Luke's Guidelines Hypercalcaemia https://www.royalsurrey.nhs.uk/download.cfm?doc=docm93jijm4n7157.pdf&ver=15066)**

1. Most commonly with Breast, Myeloma, SCLC and RCC
2. If Calcium <2.9 and asymptomatic – consider discharge but needs discussion with primary treating Oncologist
3. If Calcium >2.9 and patient symptomatic – ADMIT and treat
4. Intravenous fluids first line – must be 3-4L/24h of 0.9% saline unless evidence of cardiac disease, monitor fluid balance and consider catheterisation
5. Bisphosphonates: (A) **IV Zoledronic Acid** 4mg over 15 mins (avoid if Crt >400 µmol/L unless benefit outweighs risk), (B) **IV Pamidronate** 90mg over 4 hours (avoid if CrCl <30mls/min unless benefit outweighs potential risk)
6. Usually takes 48 hours to reduce calcium with Bisphosphonates, avoid giving until at least 4 days after last dose
7. Other options include Calcitonin (4 Units/kg every 12 hours and can be increased after 1-2 days to 8 Units/kg every 12 hours up to a maximum of 8 Units/kg every 6 hours after further 2 days) and Denosumab (120mg SC) or Corticosteroids (usually for myeloma, lymphoma or leukaemia at Prednisolone 40mg – 100mg/day)
8. Dialysis is a possible last resort however needs to be carefully weighed up in the clinical scenario. Calcium chelation is also an option with Sodium EDTA and IV Phosphate.

Tumour Lysis Syndrome

1. Adequate hydration with IV fluids to maintain urine output >100ml/m^2/h
2. Treat electrolyte disturbances intravenously with rigorous biochemical monitoring
3. Severe hyperkalaemia (>7 mmol/l), intractable hyperphosphataemia and hypocalcaemia, a calcium–phosphate product >70 mg2/dl2, severe oliguria or anuria in the absence of hypovolaemia, and significant fluid overload with haemodynamic repercussions are all indications for urgent renal replacement therapy by haemodialysis or haemofiltration.
4. For the treatment of hyperuricaemia in established laboratory or clinical TLS, rasburicase is the drug of choice, at a dose of 0.2 mg/kg daily given as a 30-minute infusion.
5. Allopurinol should be considered in cases of G6PD deficiency or in rasburicase hypersensitivity

Hiccups

1. Chlorpromazine 25mg – 50mg PO TDS/QDS can be given. Treatment of choice.
2. Metoclopramide can be given IV for 5 days. Dose 10mg every 6-8 hours.
3. Baclofen 5-10mg administered orally every 8 hours may decrease the severity of hiccups.
4. Other options include: Valproic Acid 500-1000mg daily or Gabapentin 300-400mg every 8 hours. There are other options including nifedipine, nefopam, methylphenidate or olanzapine however the evidence base is poor.
5. Consider advising acupuncture, phrenic nerve disruption in severe cases or vagus stimulators.

Nausea and Vomiting (Ref: https://www.royalsurrey.nhs.uk/download.cfm?doc=docm93jijm4n7171.pdf&ver=15078)

1. Consider appropriate imaging based on source of emetogenesis – if neurological, CT/MR scan Brain and if abdominal – CT AP with contrast.

	Nausea	Vomiting
Grade 1	Able to eat, but loss of appetite	1 episode in 24 hours
Grade 2	Oral intake decreased without significant weight loss	2-5 episodes in 24 hours
Grade 3	Inadequate oral caloric or fluid intake; IV fluids, tube feeding, or TPN indicated	≥ 6 episodes in 24 hours; IV fluids, tube feeding, or TPN indicated
Grade 4	-	Life-threatening consequences; urgent intervention needed

2. Grade the Nausea or Vomiting using the above table **(from the amazing St. Luke's guidelines)**
3. Ondansetron 8mg TDS 1st line, can also use Metoclopramide 10mg PO TDS (do not use in case of bowel obstruction and check ECG before)
4. Along with IV Hydration, next steps can include Cyclizine 50mg IV TDS, Levomepromazine 6.25mg PO/IV/SC QDS (Max 25mg in 24 hours) or Olanzapine 5mg PO OD (if not given prophylactically)
5. Dexamethasone 8mg IV OD-TDS or Prednisolone/Methylprednisolone **(not for AML patients)**
6. If poor response to oral therapy – subcutaneous infusion required for intractable nausea and vomiting
7. Aprepitant 125mg PO or 80mg PO OD is another option for severe cases.

Mucositis

1. Can be caused by chemotherapy or radiation treatment
2. Management can be divided into three sections – preventative, pain control and direct mucosal repair/avoiding further damage
3. Difflam (benzydamine) mouthwash first line – 15mls up to every 1.5 hours, followed by second line Paracetamol + Codeine/Laxative combination for pain relief
4. Go to oral morphine direct if evidence of Grade 3 or 4 mucositis
5. Hydrocortisone 2.5mg buccal tablets QDS, Gelclair oral gel 15mls sachets
6. Lidocaine 2% gel, soluble aspirin (unless contraindications present) 300mg or Bonjela (choline salicylate dental gel) TDS.

7. Tranexamic Acid 5% mouthwash can be prescribed to patients with significant bleeding
8. Stop treatment in severe cases and consider DPD deficiency in patients on 5FU
9. Antiviral and antifungal therapies can be considered – 5% topical aciclovir or fluconazole 100mg PO OD for 7-14 days
10. Everolimus associated mucositis – Betamethasone mouthwash 500mcg soluble tablets

Diarrhoea (Ref: https://www.royalsurrey.nhs.uk/download.cfm?doc=docm93jijm4n7165.pdf&ver=15073)

1. Exclude other sinister causes of diarrhoea, all patients must have detailed blood work and stool culture. If there are any signs of infection, Sepsis pathway. CT Abdomen/Pelvis if there is a concern regarding collections or intraabdominal sepsis.

	Grade 1	Grade 2	Grade 3	Grade 4
Diarrhoea (without stoma)	Increase of < 4 stools/day over baseline	Increase of 4-6 stools/day over baseline, or nocturnal stools. Not interfering with daily living activities.	Increase of ≥ 7 stools/day over baseline. Interfering with daily living. Incontinence Hospitalisation	Life threatening consequences e.g. haemodynamic collapse
Diarrhoea (with stoma)	Mild increase in stoma output compared to baseline	Moderate increase in stoma output compared to baseline. Not interfering with daily living activities.	Severe increase in stoma output over baseline, interfering with daily living.	Life threatening consequences

2. Grade 1 or 2 diarrhoea with no complication do not need admission to hospital, Grade 3 and 4 admit and manage in hospital
3. IV fluids to rehydrate, C-Diff and stool culture as basic, ensure good nutrition as risk of deterioration and deconditioning with hospital admission
4. Initial agents Loperamide 4-8mg QDS (or 2mg every 2 hours) AND Codeine Phosphate 30 – 60mg QDS
5. If not resolving, can consider Octreotide s/c 300mg/24 hours and/or Budesonide CR capsules 9mg PO OD until diarrhoea resolved
6. If diarrhoea does not resolve in 48 hours, increase Octreotide dose to 600mcg/24hrs as infusion
7. If 12-hour diarrhoea free interval, stop loperamide, codeine and budesonide (unless RT induced in which case continue Loperamide for duration of RT)
8. If no fever, dehydration, melaena or neutropenia – can be evaluated as OP. DPD testing if on 5FU.