Neurology on the oncology ward: what does the non-neurologist need to know?

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What do I need to know?

- History and examination is the same
- Differential diagnoses may be wide
- Patients can have more than one thing wrong
Simple approach to neurology

• WHERE is the problem?

• WHAT is the problem?

  Infection
  Inflammation
  Infiltration
  Metabolic
  Endocrine
  Vascular
  Drugs
Content

• Common neurology problems on the oncology ward
  • Disorders of alertness and seizures

• Chemotherapy associated neuropathy
  • Presentation and management

• Neurological complications of new oncology drugs
  • Checkpoint inhibitors CTLA-4 and PD-1
Disorders of alertness

• WHERE? - Diffuse brain or RAS
• Are there focal signs?

• Signs to note
  – Pupil responses
  – Eye position
  – Asymmetry of limb responses
  – Meningism (caution)
Disorders of alertness – WHAT?

- Infection (opportunistic)
- Infiltration (post-ictal, CSF neoplastic)
- Inflammation
- Metabolic (NH3, Wernicke’s)
- Endocrine
- Vascular (arterial, venous, clot, bleed)
- Drugs
Disorders of alertness – WHAT?

- **Drugs**
  - Supportive and Treatment

- Supportive (sedatives, anti-deps, haloperidol, valproate)

- Treatment
  - mainly IT or high dose
  - Methotrexate, 5FU
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Seizures

- Manage as you would in a medical ward
- History, witness history, examination
- Usually image, blood screen +/- LP
- WHAT? – apply surgical sieve…
Seizures – specific causes

- **Infection** (meningitis, encephalitis, abscess)
- **Infiltration** (15% CSF neoplasia only)
- **Inflammation** (limbic encephalitis)
- **Metabolic** (Mg and Ca - Cisplatin)
- **Endocrine** (SiADH)
- **Vascular** (PRES)
- **Drugs** (treatment - as previous)
  (supportive – steroids, withdrawal)
Typical imaging findings of PRES
Seizures - management

• Acutely stabilize as usual

• Treat underlying cause

• Iv drugs phenytoin, keppra, valproate

• Be aware for NCSE and EPS

• Discuss with ITU
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Chemotherapy neuropathy

- Painful, burning, tingling, “walking on cobbles”, abnormal temperature regulation. Hands + feet

- Autonomic: constipation, postural BP drop

- Distal symmetrical axonal loss

- Stops chemotherapy and reduces QOL
Chemotherapy neuropathy

- Cisplatin, taxanes, vincristine, bortezomib

- Risk factors for neuropathy are: dose, multiple drugs, age, diabetes, race

- Neuropathy occurs weeks to months after chemotherapy with “coasting”

- Treatment: duloxetine, TCAD, gabapentin
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Checkpoint Inhibitors: CTLA-4 & PD-1

- **CTLA-4** Cytotoxic T cell lymphocyte associated protein e.g., Ipilimumab

- **PD-1** Programmed cell death 1
e.g., pembrolizumab, nivolumab

- CTLA-4 and PD-1 are proteins on some T cells that acts as a type of “off switch” to stop T cells from attacking other cells in the body. They do this by attaching to ligands, e.g., PD-1 a protein on some cells.

- However some cancer cells express ligands such as PD-1 to evade immune attack.
Common side effects of CPIs

- Dermatology, gut, liver, endocrine

- Grade 3 /4: 25% ipilimumab, 10% nivolumab, 55% together

- Not unusual to have side effects after treatment initiation or even after treatment stops
Neurological side effects of CPIs

- Hypophysitis (fatigue and headache)
- Guillain-Barre and Meningo-radiculoneuritis
- Myasthenia Gravis
- Enteric neuropathy
- Encephalitis (1 NMDAR positive)

• Manage with 1mg/kg/day prednisolone 1/12

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