It’s Not A Tumor!

Oncologic Emergencies

Diane M. Birnbaumer, M.D., FACEP
Professor of Medicine
University of California, Los Angeles
Senior Clinical Educator
Department of Emergency Medicine
Harbor-UCLA Medical Center

Oncologic Emergencies

- Increasing incidence of cancer
- Improved survival
- Patients with malignancies may present to EDs and general medical offices

Oncologic emergencies
- Those resulting from the disease itself
- Those resulting from cancer therapy

Oncologic Emergencies: General Categories

- Metabolic Emergencies
  - Hypercalcemia
  - Tumor Lysis Syndrome
- Neurologic Emergencies
  - Malignant spinal cord compression
  - Brain metastases and increased ICP
- Infectious Complications
  - Neutropenic fever

Oncologic Emergencies: General Categories

- Cardiovascular Emergencies
  - Malignant pericardial effusion
  - Superior vena cava syndrome
- Hematologic Emergencies
  - Hyperviscosity due to dysproteinemia
  - Hyperleukocytosis and leukostasis
48 year old female with lymphoma receiving chemotherapy presents complaining of nausea, vomiting and extreme fatigue. No other complaints.

PMH: None except lymphoma

SH: Nonsmoker, nondrinker

Meds: Ondansetron, ativan

VS: T=100.6  HR 100  RR 18  110/60

Normal habitus; looks fatigued, nontoxic

Has left arm PICC line; looks good

Total body exam normal except enlarged liver and spleen, palpable cervical and axillary nodes

Patient states her temperature at home was 100.5

Last chemo was one week ago

What do you order now?

Blood cultures, urine culture, CBC, chem-10, UA, CXR ordered

Do you need to know anything else?
Oncologic Emergencies
Case Presentation
- Chem-10, CXR, UA all normal
- CBC
  
  \[
  \begin{array}{c}
  2.0 \\
  32.9 \\
  390
  \end{array}
  \]
  
  Differential: 5% PMNs, 90% lymphs, 5% monos

What is the ANC?

\[2000 \times 5\% = 100\]
Neutropenic Fever

- Fever
  - Single oral temperature > 38.3°C (101.3°F)
  - Sustained temperature > 38°C (100.4°F) for > 1 hour
- Neutropenia
  - Absolute neutrophil count < 1,000
- Severe neutropenia
  - Absolute neutrophil count < 500

- Most commonly seen after chemotherapy
  - Also seen in myelogenous cancers
- Risk of infection depends on...
  - Depth of neutropenia
  - Duration of neutropenia
  - Comorbid conditions (e.g. mucositis)
- Nadir usually 5-10 days after last chemotherapy dose
  - Recovers 5 days after nadir (usually)

- Organisms
  - Multiple organisms implicated
    - Enteric gram negatives
    - Gram positives
  - Frequently no organism recovered

- Presentation
  - Fever usually only symptom
  - May range from fever only to severe sepsis
  - Neutropenia leads to atypical presentation with common infections
    - E.g. pneumonia patients may have no infiltrate; UTI patients may have no pyuria
Oncologic Emergencies
Neutropenic Fever

Presentation
- Careful physical examination crucial
  - Particular attention to skin, oral cavity, sites of indwelling catheters, perianal area
  - Rectal examination discouraged

Evaluation
- Blood cultures
  - Peripheral vein AND any indwelling catheters
  - Urine cultures
  - Sputum cultures
  - Stool, CSF cultures if indicated
- CXR may be normal
  - Consider CT for higher resolution

Treatment
- All febrile neutropenic patients should receive antibiotics ASAP
  - Afebrile neutropenic patients with high suspicion of infection also should get rx
- Broad spectrum to start; narrow later
- Use local “antibiogram” and published guidelines to determine best choices
**Oncologic Emergencies**

**Neutropenic Fever**

- Treatment
  - Most patients should be admitted
  - Highly selected patients MAY be treated as outpatients
    - Very close follow-up necessary
    - Must have ready access to health care
    - Assess personal / social situation

**Case Presentation**

- Patient was pan-cultured
- IV vancomycin, cefepime started in the ED
- Patient admitted
- All cultures negative
- Cell count rebounded in 3 days
- Discharged with oncology follow-up

**Case Presentation**

- 37 year old woman treated for breast cancer 5 years ago with negative surveillance on follow up presents to PMD’s office with mid- and low back pain after pulling her children in a wagon. Pain improved with ibuprofen. No other complaints.
- PMH: Otherwise normal

**Case Presentation**

- VS normal
- Exam normal except paravertebral TTP lower thoracic and lumbar spine
- Mild TTP midline same areas

- Patient reassured, sent home with prn ibuprofen
**Oncologic Emergencies**

**Case Presentation**

- Returns two days later with worsening pain
- No neurologic complaints
- Exam unchanged except perhaps a bit more TTP midline

- What would you do now?
- Sent home again with same instructions

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**Oncologic Emergencies**

**Case Presentation**

- 3 days later patient is brought to ED because of inability to get out of a chair and urinary and fecal incontinence. Back pain significantly worse.
- VS WNL
- Exam reveals no rectal tone, decreased sensation T10 level down, 2/5 strength bilateral lower extremities

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**Oncologic Emergencies**

**Case Presentation**

- What tests do you order now?
- Do you give her any treatment?
Oncologic Emergencies

Spinal Cord Compression

- Relatively common
  - 2.5 to 6% of cancer patients
  - Most common: Breast, lung, prostate
- Confers poor prognosis overall
- Urgent need to make diagnosis and treat
  - Neuro status at presentation and rapidity of onset predict functional outcome

- Usually results from extension from spinal bony metastases
  - Less commonly extends through foramina
    - Lymphomas, sarcomas
    - Will not see bony destruction
- Most common in thoracic spine

Presentation

- 90% have back pain
- 80% have preceding diagnosis of malignancy
- May have several simultaneous lesions
- BACK PAIN + MALIGNANCY = SCC!!

Presentation

- Symptoms
  - Radicular pain
  - Motor weakness
  - Gait disturbance
  - Bowel or bladder dysfunction
- Imperative to try to diagnose before neurologic dysfunction occurs
Oncologic Emergencies
Spinal Cord Compression

- **Evaluation**
  - MRI is imaging study of choice
  - Consider imaging entire spine (+/- C spine)
  - CT myelography second choice
  - Plain films / nuclear medicine poor choices
    - Limited sensitivity and specificity
    - Plain films may show bony lesions
    - Negative plain films do NOT rule out SCC

- **Treatment**
  - Start as soon as possible; need tissue diagnosis
    - **Glucocorticoids**
      - Dexamethasone 10-16 mg IV, then 4 mg every 6 hours
    - **Radiation**
      - Mainstay of therapy (?)
      - Surgery may also be indicated (or preferable)

Oncologic Emergencies
Case Presentation

- Patient treated with corticosteroids in the ED
- Neurosurgery consulted – felt medical therapy more appropriate
- Emergent radiation treatment started
- Patient had minimal neurologic recovery

Oncologic Emergencies
Case Presentation

- 80 year old male with colon cancer presents with shortness of breath. Has been coming on gradually over past 2-3 weeks. Now unable to sleep flat and unable to walk across the room.
- PMH: HTN, DJD
- SH: 20 pk/yr smoking; quit 20 yr ago
Oncologic Emergencies
Case Presentation

- VS: HR 120, reg 100/90 26 Afeb
- Neck veins distended
- Heart sounds normal
- Moderate pedal edema
- Lungs clear
- Rest of exam normal
- What do you think is wrong?
- What do you do now?

The nurse brings you this rhythm strip

- What is this?
- What do you do now?
Malignant Pericardial Effusion

- Common in advanced cancer
- Frequently asymptomatic
- Poor prognosis
  - Most patients die within one year

Presentation

- Symptoms depend on rapidity of onset
- May see dyspnea, cough, chest pain, dysphasia, hiccups, hoarseness
- May find tachycardia, distant heart sounds, JVD, UE and LE edema, pulsus paradoxus
- Tamponade = hypotension/shock with tachycardia, JVD
Oncologic Emergencies
Malignant Pericardial Effusion

**Evaluation**
- Echo preferred test
  - Presence of fluid
  - "Tamponade physiology"
- CT and MRI also useful

**Treatment**
- Pericardiocentesis

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Oncologic Emergencies
Case Presentation

- Patient had pericardiocentesis in interventional radiology suite
- Malignant cells found in fluid
- Long term prognosis discussed with patient and his family
  - Patient decided to create advanced directive and declined further care

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Oncologic Emergencies
Case Presentation

- 72 year old male with non-small cell lung cancer presents confused. No other complaints except fatigue.
- PMH: Lung cancer with bony mets (femur); HTN, CAD
- PSH: Smoker, social drinker
- All: NKDA
Oncologic Emergencies
Case Presentation

- VS WNL - afebrile
- Thin, comfortable appearing 72 y/o male
- Exam normal except difficulty remembering 3 items at 5 minutes
- Neuro exam nonfocal

- What is your differential diagnosis?
- What are the two most important tests?

Oncologic Emergencies: Hypercalcemia

- Occurs in 10-30% of cancer patients
- Usually seen in patients with known cancer
- Carries a poor prognosis
- Most commonly seen in
  - Breast cancer
  - Lung cancer
  - Multiple myeloma

Oncologic Emergencies
Case Presentation

- Head CT negative
- Labs all normal except calcium of 15.9

- What do you do now?

Oncologic Emergencies: Hypercalcemia

- 3 types
  - Humoral hypercalcemia of malignancy
    - Via PTHrP (parathyroid related hormone)
    - Most common mechanism (33-88%)
  - Local bone destruction
  - Tumor production of vitamin D analogues
Oncologic Emergencies: Hypercalcemia

**Presentation**
- Multiple, nonspecific symptoms
- Lethargy, confusion
- Anorexia, nausea
- Constipation
- Polyuria, polydipsia
- Some correlation with rapidity of onset and degree of hypercalcemia

**Physical exam usually unhelpful**
- May see lethargy
- May see dehydration

**Laboratory**
- Must correct total serum calcium for albumin
  - Measured total Ca + [0.8 x (4.0 - albumin)]
- Also check creatinine, other electrolytes, alkaline phosphatase
- Low serum chloride suggestive of hypercalcemia of malignancy

**Treatment**
- Consider the big picture; comfort measures only may be appropriate
- Hydration with normal saline first step
  - Patients often very volume depleted
  - Avoid loop diuretics until euvolemic
- Bisphosphonates
  - Pamidronate, zoledronic acid
  - Doses adjusted based on renal function
  - Block osteoclastic bone resorption
- SubQ or IM calcitonin (not nasal)
  - Quickly lowers serum calcium levels
  - Short-lived effect
**Oncologic Emergencies: Hypercalcemia**

- Treatment
  - Corticosteroids
    - Most effective in hematologic malignancies
    - Elevated levels of vitamin D
  - Dialysis
    - Patients with renal or heart failure
  - Avoid oral phosphate
  - Effective treatment of underlying cancer may be useful

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**Oncologic Emergencies Case Presentation**

- Patient received IV NS
- Calcium came down to 10.2 with fluids only
- Workup showed multiple bony metastases throughout
- Follow-up with oncologist; long term care plan discussed with patient

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Oncologic Emergencies

Case Presentation

- Labs all WNL
- Head CT...

Brain Metastases / Increased ICP

- Seen in up to 25% of terminal cancer patients
- Lung, breast, melanoma most common
- Brain edema from tumor expansion causes increased ICP

Brain Metastases / Increased ICP

Presentation
- History of cancer in most cases
- Symptoms range from focal to generalized
- Symptoms often subtle, gradual in onset
- Only 50% have headaches
- May see seizures, symptoms of increased ICP
- Confers very poor prognosis

Evaluation
- MRI preferred study
- CT may miss posterior fossa lesions

Treatment
- May want to consider palliative treatment only
- Steroids for symptom management
- Antiepileptics as needed
- Whole brain irradiation may be indicated
Oncologic Emergencies
Case Presentation

- Patient received dexamethasone and one round of whole brain irradiation
- Home hospice care discussed with patient and his family / patient placed on home hospice with comfort care
- Patient died peacefully at home surrounded by his family 6 days after positive head CT scan

A personal note...

- Discussions regarding end of life care crucial in terminal diseases
- Hospice care, especially home hospice care, provides comfort and addresses quality of life
- Goal is to help the patients live comfortably on their own terms and choose how they want to LIVEw the rest of their lives

Thank You For Your Attention!!