

Emergencies in oncology

Oncological Emergencies

I. Structural emergencies:

- Superior vena cava obstruction syndrome.
- Brain metastasis with raised intracranial pressure.
- Spinal cord compression.

II. Metabolic emergencies:

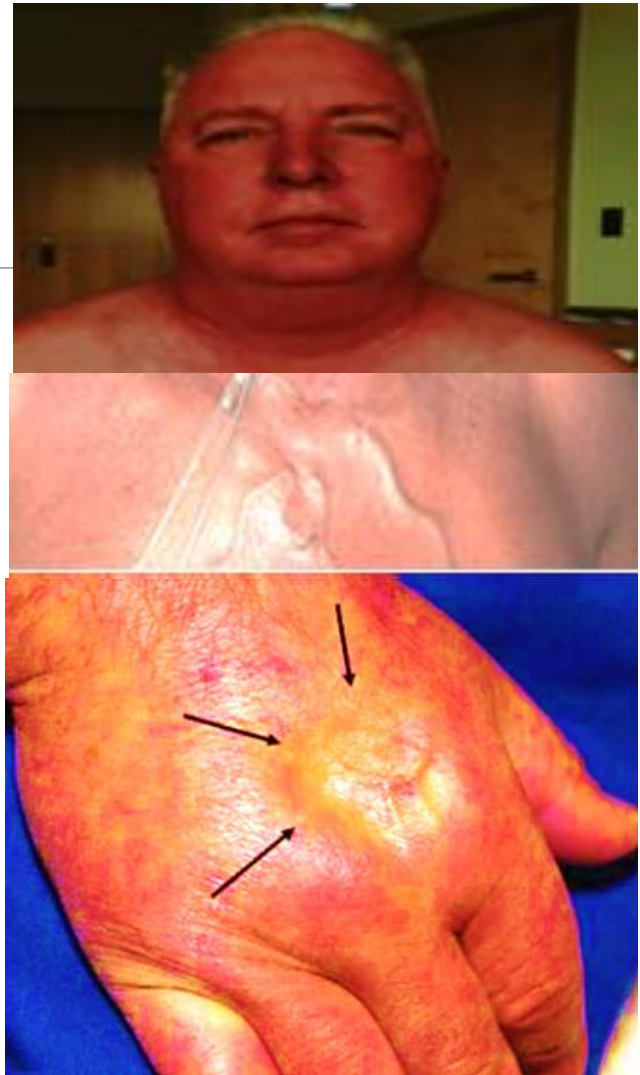
- Tumor lysis syndrome
- Malignancy associated hypercalcemia

III. Chemotherapy related – toxicities

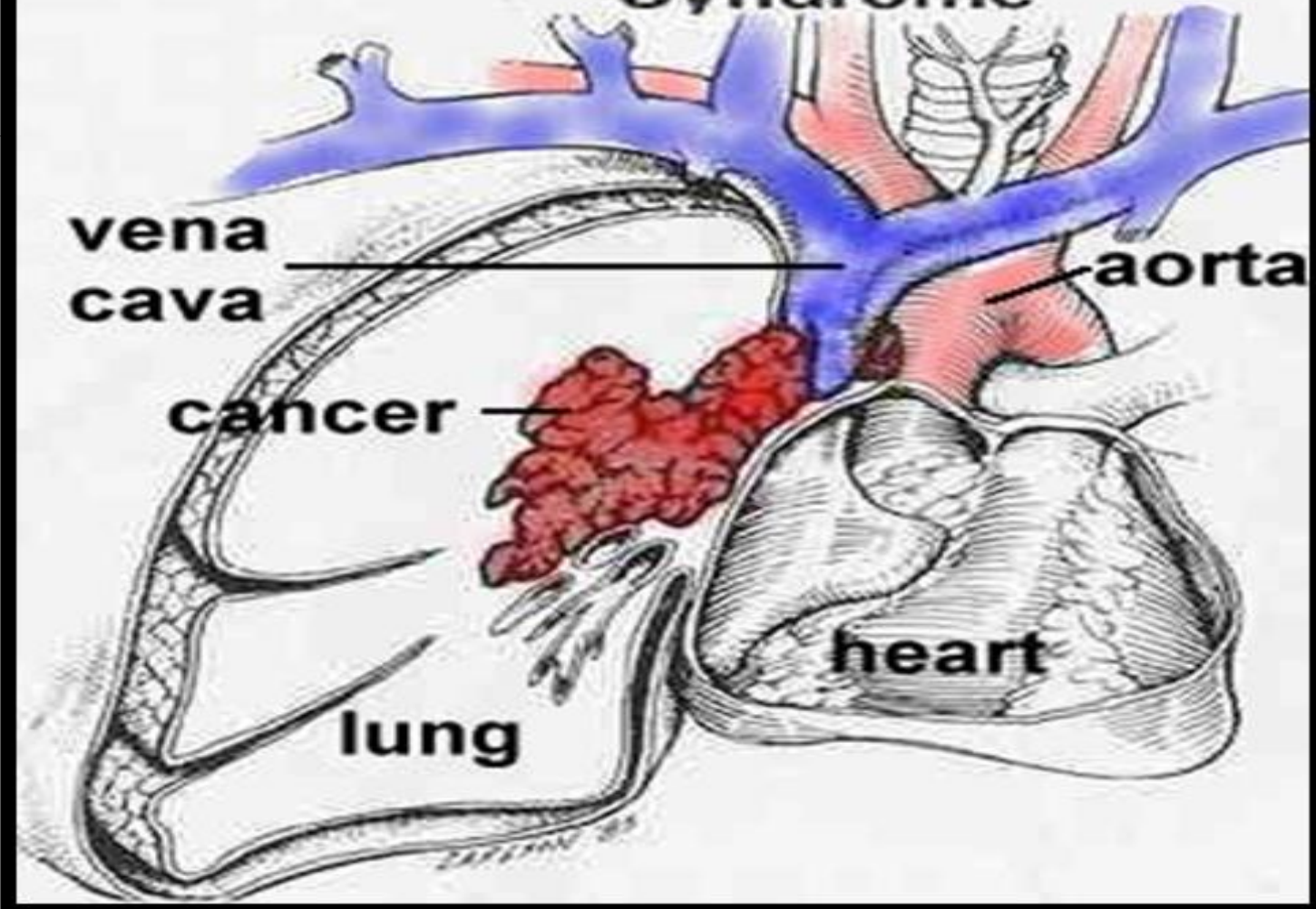
- Febrile neutropenia
- Side effects of chemotherapy drugs

69 yr old male evaluated in the ER, complaining of SOB, difficulty in swallowing, head fullness, progressive cough, and wt loss over the last 3 months. On physical exam. Vitally stable , edematous face , venous distention noted on neck and chest wall, cardiovascular and respiratory exam were normal. CXR revealed wide mediastinum and small BL pleural effusions what is the diagnosis?

- 1. Heart failure**
- 2. Pneumonia**
- 3. SVC obstruction syndrome**
- 4. P.Embolism.**



Superior Vena Cava Syndrome



Superior Vena Cava Syndrome

emergency if there is tracheal compression and airway compromise

Causes: 90% malignancies ($\frac{3}{4}$ lung cancer, and lymphoma.

10% thrombotic.

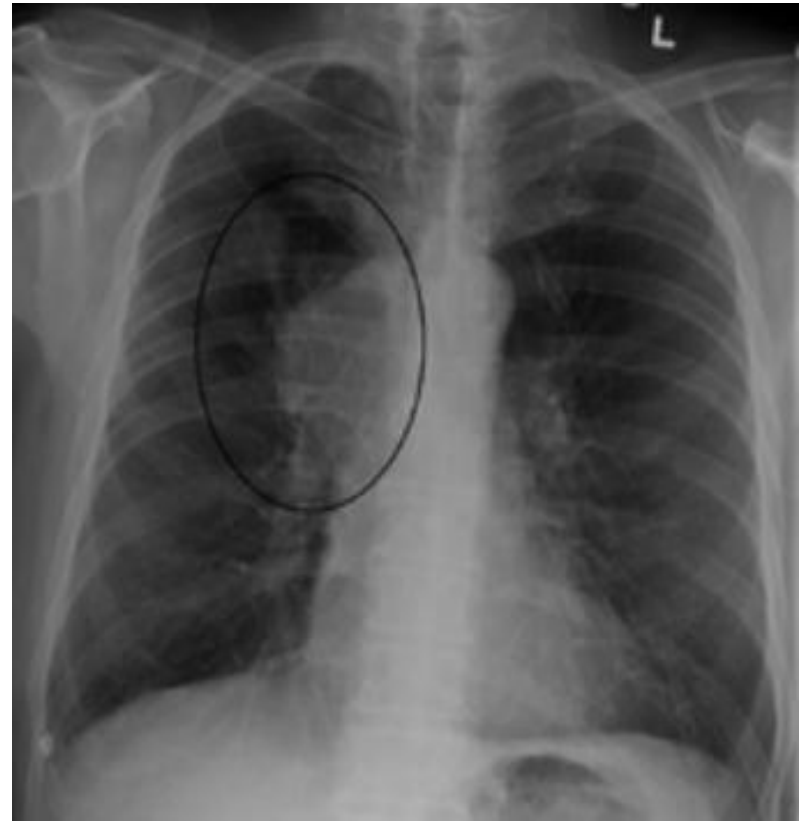
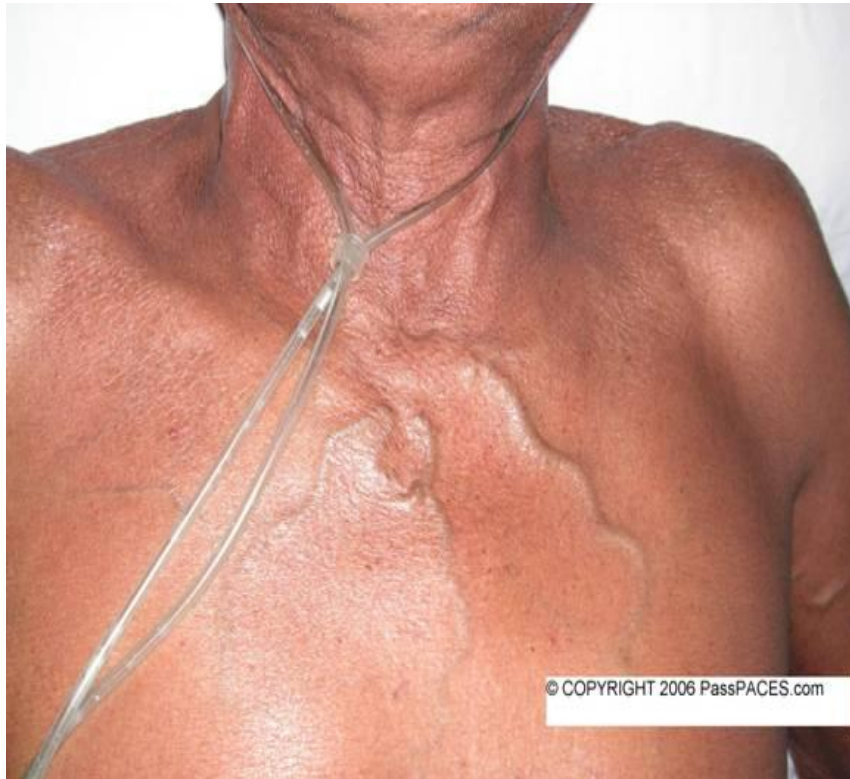
S&S: dyspnea, orthopnea, cyanosis/plethora, swollen face, engorged non pulsatile veins, Pemberton`s sign.

INVX: contrast enhanced C.T. scan

Pemberton's sign is used to evaluate venous obstruction in patients with goiters. The sign is positive when bilateral arm elevation causes facial plethora. It is resulting from the thyroid obstructing the thoracic inlet.



Patient who presented with progressively enlarging veins over the anterior chest wall. A diagnosis of a right-sided tumor compressing the SVC was made.



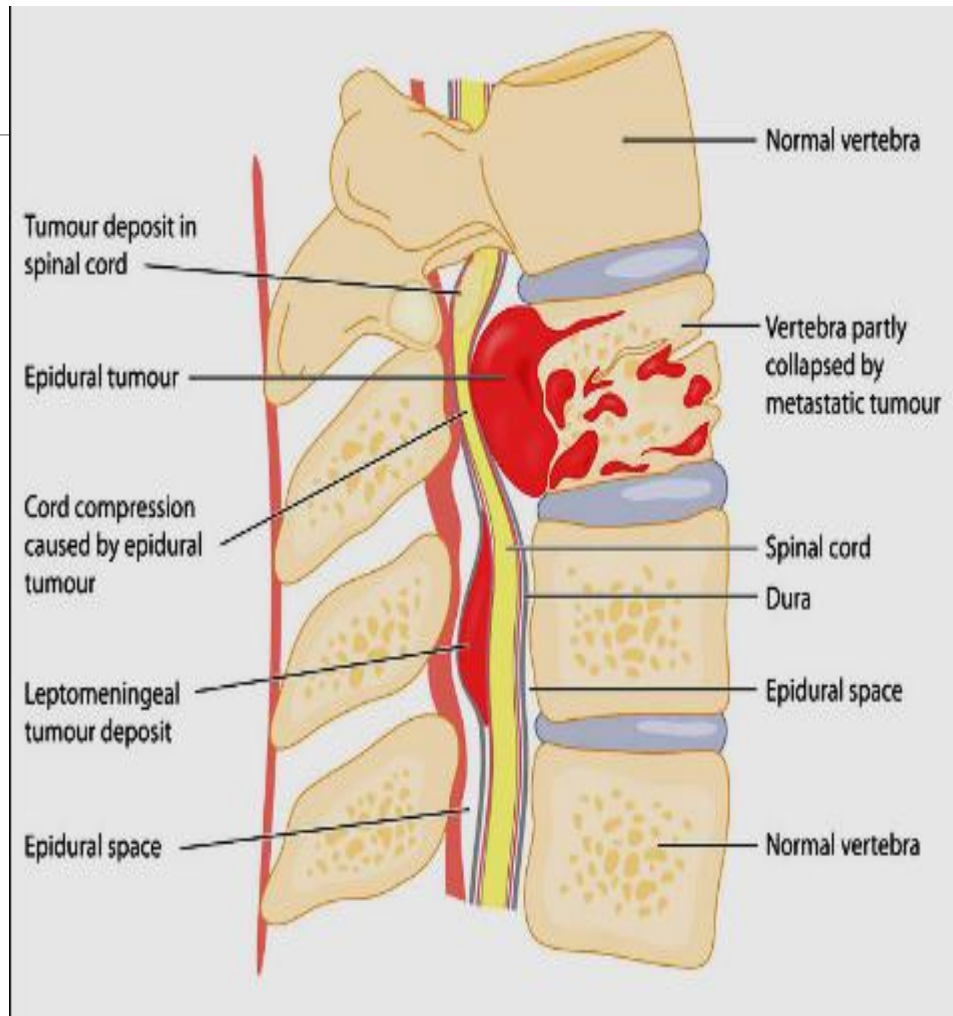
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- **RX:emergency**
 - **ABC if airway compromise**

 - **Dexamethason 16mg /24h**
 - **In selected cases Balloon venoplasty and stent**
 - **Radiotherapy or chemotherapy depending on tissue biopsy.**

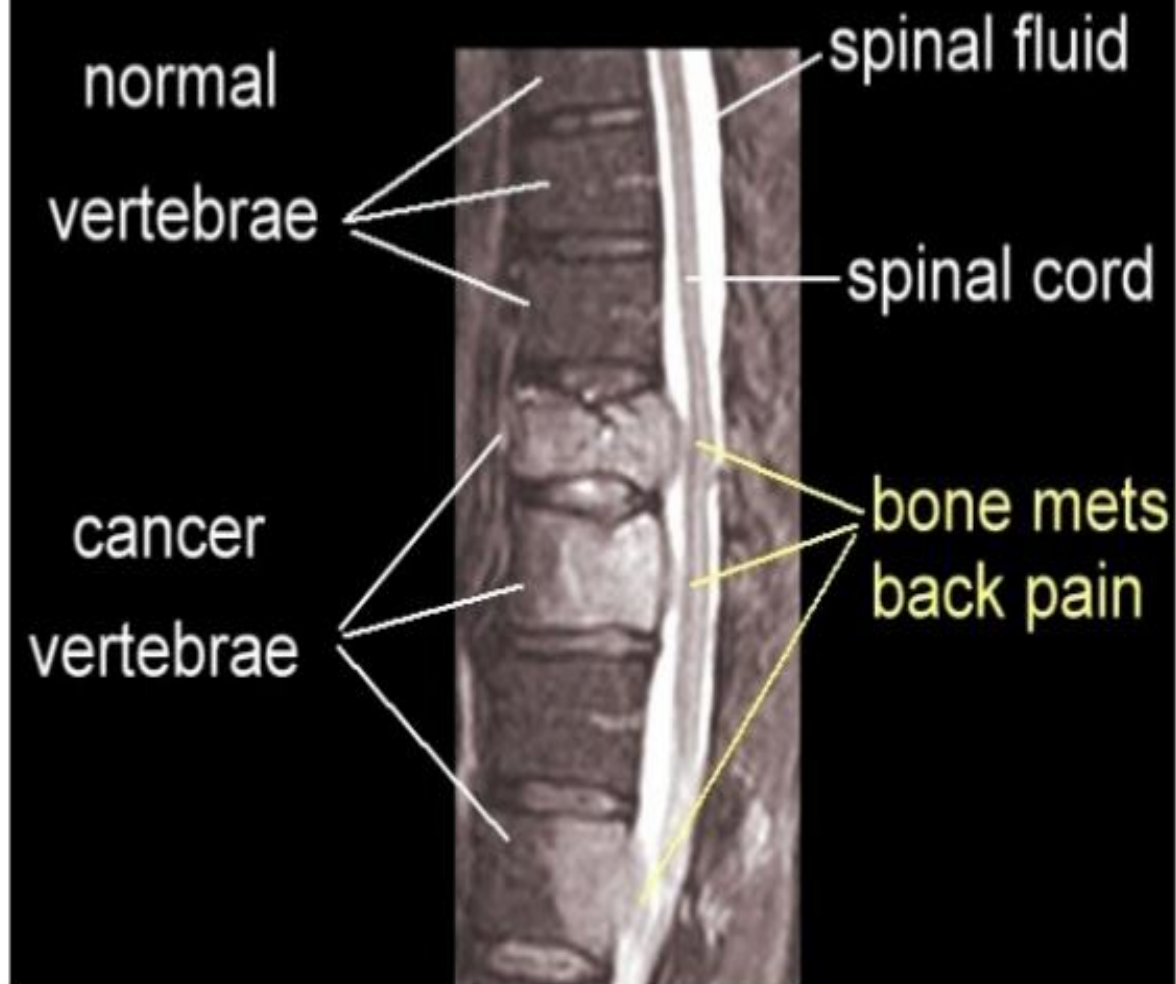
70 yr old male known case of Prostate carcinoma with 2yr in spine he is on hormonal treatment presented to ER with a week H/O lower back pain, urine retention and lower limb weakness

What is the possible diagnosis?

- 1. Cerebro-vascular accident.**
- 2. Brain metastasis.**
- 3. Spinal cord compression.**



MRI Spine



Spinal Cord Compression

Causes: - Extradural metastasis

- Direct extension of the tumor

S&S: Back pain, weakness or sensory level , sensory loss, bowel or bladder dysfunction.

INWX: MRI whole spine

Rx:Urgent Rx to preserve neurological function

{{time is neurons}}

= Dexamethason 16mg/24h

= Palliative radiotherapy ((clinical oncologist))

= Decompressive surgery ((neurosurgeon))

= Treat underlying malignancies

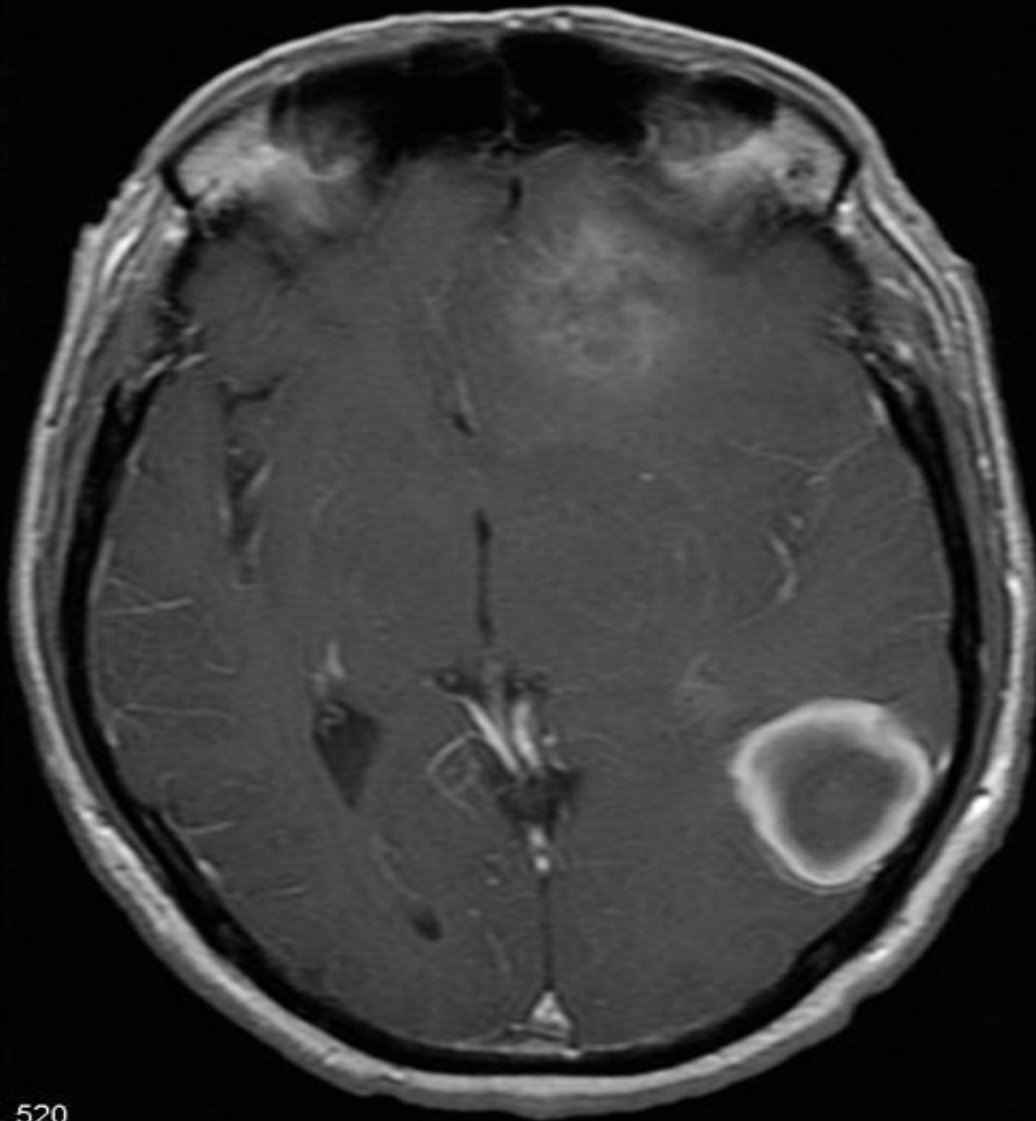
70 yr old male, heavy smoker, diagnosed as case of Lung Cancer with bone metastasis 6 months back, brought by his relative to ER, pt became drowsy over the previous few days and became unresponsive to surrounding and the patients family notice abnormal movement of his upper limb. On physical exam, vitally stable, responds to painful stimuli and neurological exam showed right side weakness, no cranial nerve palsy, rest of examination were normal.

What is the DDX?

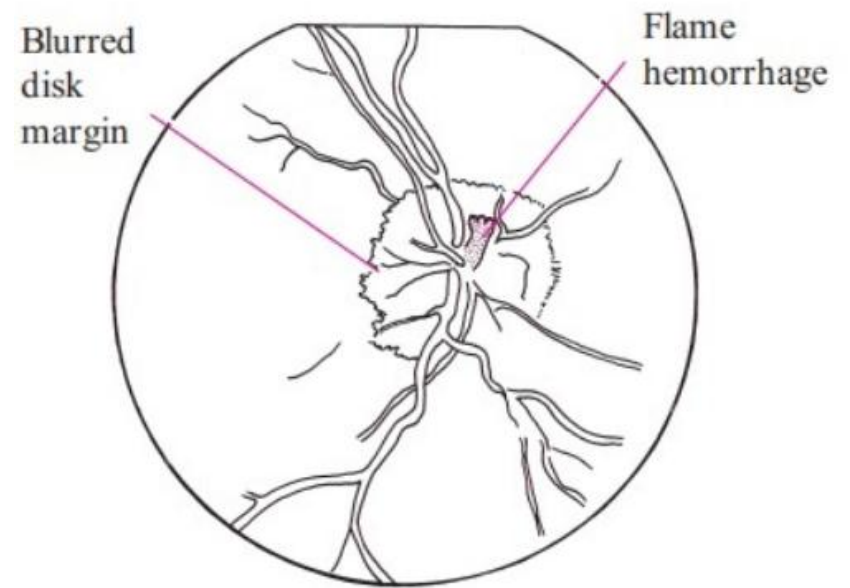
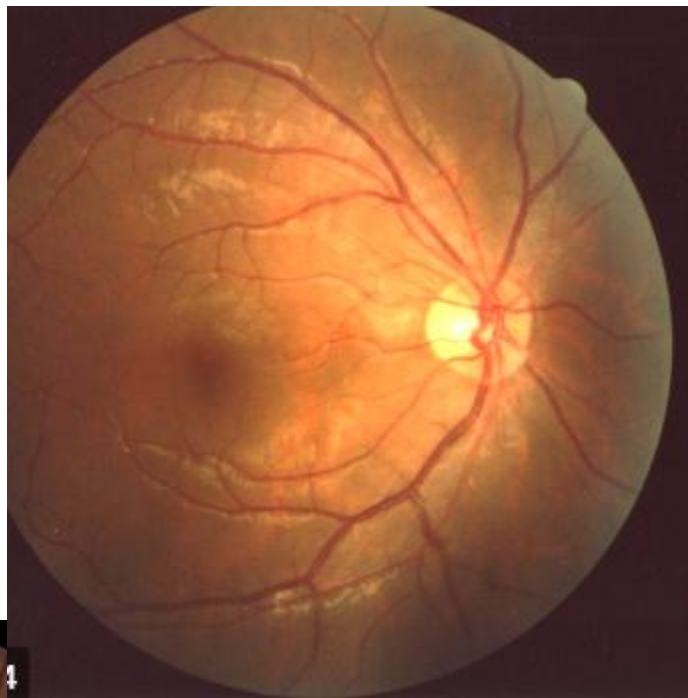
What is the investigation of choice?

What is the emergency treatment for this patient?

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Brain Metastasis with Increased Intracranial Pressure (ICP)

Mechanisms: mass effect, edema or obstruction to fluid outflow

Causes: primary CNS tumors (10%), metastasis (90%)

S&S: headache(early morning , increased with sneezing and leaning forward) nausea, vomiting, fits altered mental status and focal neurological signs

INVX: urgent MRI or C.T. scan

RX:

- **high dose corticosteroid(Dexamethason)antiepleptics if convulsins**
- **Mannitol for cerebral odema**
- **Radiotherapy or surgery**

Tumor lysis syndrome

Caused by massive destruction of cells after starting chemotherapy

Rapidly proliferating leukemia, lymphoma, myeloma and germ cell tumors

Metabolic disturbances: K, urate and phosphate, Ca²⁺.

Results in renal failure(uric acid precipitation in renal tubules)

Prevention:

- **Good hydration**
- **Allopurinol (Xanthine Oxidase Inhibitor) 24hr before chemotherapy**

Cont. Tumor Lysis Syndrome

RX: + prevention is the key

+ hemodialysis may be needed

New treatment: uricase (Recombinant Urate Oxidase)

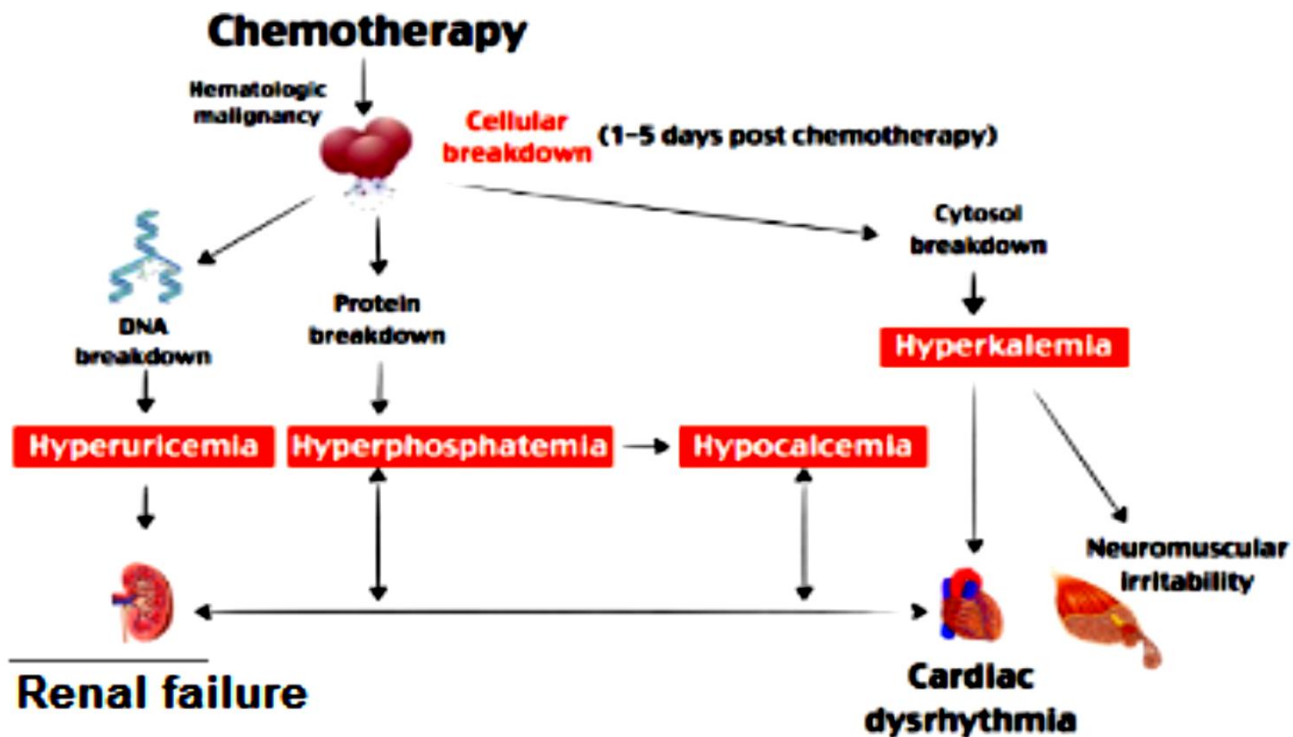
convert Uric Acid to Allantoin(10 times more water soluble than uric acid easily excreted in kidneys)



Criteria for Emergent Hemodialysis in Tumor Lysis Syndrome

1. Serum potassium ≥ 6 mEq
2. Serum uric acid ≥ 10 mg/dL
3. Serum creatinine ≥ 10 mg/dL
4. Serum phosphorus ≥ 10 mg/dL (or rapidly rising)
5. Volume overloaded
6. Symptomatic hypocalcemia

Acute Tumor Lysis Syndrome



A 20-year-old man is admitted to the hospital after a recent diagnosis of acute myeloid leukaemia. He is scheduled to begin therapy with cytarabine and daunorubicin.

Pre-treatment laboratory studies: Hb 9gm/dl, WBC 100.0000/cmm, PLT60,000/ μ l, CR 1.5 mg/Dl, urea 45mg /dl, calcium 9mg, uric acid

8.8 mg/dL (0.5 mmol/L)

Which of the following is the most appropriate next step before initiation of induction chemotherapy?

A -Administration of granulocyte-macrophage colony-stimulating factor

B-Administration of vancomycin

C-Aggressive intravenous fluid hydration and allopurinol administration

D-Alkalinization of the urine

60 yr old lady diagnosed with right breast cancer operated by mastectomy a year ago and finished her chemotherapy cycles from 6 months back presented to ER complaining of sever back pain, feeling thirsty, constipation and drowsy, on physical examination patient had normal vitals, looks dehydrated, drowsy but oriented and obeying commands rest of examination was normal, her lab work showed as follow:

S. Calcium 13mg (8-10), Na 135 (135-140), K 4.4 (3.5-4.5), urea 46 mg , Cr 1.8 mg /dl (0.5-1.2), CBC and LFT were normal.

- 1. What is the likely abnormality?**
- 2. What is the specific treatment?**

Malignancy Associated Hypercalcemia

Affects 10-20% of patients with cancer

Causes:

- 1. Lytic bone mets**
- 2. Myeloma**
- 3. Production of osteoclastic activating factors**
- 4. PTH-like hormones by tumors**

S&S: lethargy, confusion, anorexia, constipation, polyuria and polydipsia, dehydration

Cont. hypercalcemia

INVX: corrected serum Ca > 3mmol/L (> 10mg/dl)

Rx:

- **Hydration with I.V fluids (0.9 % N/S)**
- **I.V. furosemide (increase urinary Ca excretion) not THIAZIDE Diuretics**
- **I.V bisphosphonate e.g Zoledronic Acis, Pamidronate**
”
{ inhibit bone resorption by inhibiting osteoclastic activity}
- **Iv Calcitonin : short acting , old fashioned not used**
- **Treat underlying cause**
- **Steroids in Myeloma and Sarcoidosis**

37 year old male diagnosed as case of testicular carcinoma 2 months back operated and started his chemotherapy cycles last cycle was 10 days back he presented to ER with history of productive cough, fever associated with chills and shortness of breath, on physical examination showed, BP100/60mmHg, PR 104b/m, T 39c°, oral thrush, chest exam showed decrease breath sounds right lower base and course crackles, his investigation as follow:

Hemoglobin 9.1 g/dL (91 g/L)

Leukocyte count 2100/ μ L (2.1×10^9 /L)

Platelet count 135,000/ μ L (135×10^9 /L)

- 1. What is the most likely diagnosis?**
- 2. What is the immediate treatment?**

Febrile Neutropenia

Definition:

- - if $T > 38\text{ C}^\circ$ or $> 37.5\text{ C}^\circ$ on two occasions $> 1\text{hr}$ apart
- $\text{WBC} < 3000$ cells , ANC (Absolute Neutrophil count) < 1500 cells per cubic milliliters

Causes: cytotoxic- induced bone marrow failure

Life threatening bacterial infection could happen

Risk factors:

- Old age
- Type of cytotoxic regimen
- Barrier Breach; Mucositis, Dermatitis, Catheters

Cont Of Febrile Neutropenia

Clinical picture: wide range of presentations

- **Fever without focal of infection**
- **Focal of infection ; pneumonia, UTI, gastroenteritis**
- **Microbiological documented septicemia , sepsis , septic shock**

INWX: according to clinical scenario; CBC, PBF, INR, LFT, RFT, septic work up (blood , urine, sputum and stool cultures) CXR, USS, swabs,

RX:

- ❖ **I.V. broad spectrum antibiotic should be started without delay**

Cont Of Febrile Neutropenia

RX:

- ❖ I.V. broad spectrum antibiotic should be started without delay
- ❖ Should cover expected organism; Gram +ve, Gram -ve, pseudomonas or MRSA if suspected.
- ❖ Commonly used regimen Piperacillin-Tazobactam (penicillin) + Gentamycin (Aminoglycoside)
- ❖ Add Vancomycin if pt hemodynamically unstable, mucositis and indwelling intravascular catheter

Cont Of Febrile Neutropenia

- ❖ **Adjust antibiotics according to microbiology results (blood c/s)**
- ❖ **If > 72hr still febrile consider:**
 - ✓ **Fungal infection**
 - ✓ **Viral infection**
 - ✓ **TB**
- ❖ **Supportive measures: hydration, isolation, GCS factor (Filgrastim)**



Absolute Neutrophil Count (ANC)

Frequently used to assess neutropenic fever in chemotherapy patients.

When to Use ▾

Pearls/Pitfalls ▾

Why Use ▾

% neutrophils

%

% bands

%

White blood cell count

Per 1000. Enter as 8.4,
not 8400

$\times 10^3/\mu\text{L}$ ↗

