Perioperative Evaluation of the Cancer Patient

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• Board Member, Society for Perioperative Assessment and Quality Improvement (SPAQI)
  – Shameless Promo at end of talk!
• All failed attempts at humor are my responsibility alone, and not that of the conference organizers or the UT MD Anderson Cancer Center.

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Objectives

• Understand the Multi-Hit Hypothesis for perioperative cancer care
• Understand and explain how cancer therapy may affect organ systems such heart, lungs, and kidneys.
• Understand how pre-existing medical comorbidities may affect perioperative management of the cancer patient
Introduction

• Cancer continues to be a prevalent and prominent source of morbidity and mortality worldwide.
• However, therapeutic advances have significantly improved outcomes for many solid organ malignancies.
• These improvements in treatment have led to an increase in the number of patients undergoing surgery as part of their cancer treatment.
• Furthermore, more patients are experiencing cure or complete remission of cancer, and the adverse effects of their oncologic treatment may become manifest with subsequent non-cancer surgery.
Introduction II

• Of those patients who have solid tumors, 75% will undergo surgical resection for cure, and 90% will have surgery for either cure or palliation.

• Regardless of the exact purpose of surgery, cancer patients undergoing invasive procedures present several unique challenges.

• Preoperative evaluation may identify risks, but these must be weighed against the adverse effects of delaying time-sensitive surgery in a patient with operable cancer.

• Postoperative management must also take a patient’s cancer and its treatment into consideration to assure optimal recovery.
# Surgery in Cancer Patients

<table>
<thead>
<tr>
<th>Surgery Type</th>
<th>Purpose</th>
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<tbody>
<tr>
<td>Preventive</td>
<td>Removal of organs in genetically acquired conditions</td>
</tr>
<tr>
<td>Diagnostic</td>
<td>Biopsy, endoscopy, etc.</td>
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<tr>
<td>Staging</td>
<td>Exploratory surgery</td>
</tr>
<tr>
<td>Curative</td>
<td>Performed with the intent to cure</td>
</tr>
<tr>
<td>Debulking</td>
<td>Removal of part of the tumor (cytoreduction)</td>
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<tr>
<td>Palliative</td>
<td>Performed to relieve discomfort, pain, or organ dysfunction</td>
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<tr>
<td>Supportive</td>
<td>Placement of vascular access devices or feeding tubes; reconstruction or restoration</td>
</tr>
<tr>
<td>Unrelated</td>
<td>Surgery for an unrelated medical condition during cancer treatment or for a cancer survivor</td>
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</table>
Cancer Medicine, It's the logistics ...

- Risk Assessment and Medical Optimization
  - Based on your evaluation, the patient may not get the optimal therapy, or conversely, they may choose not to undergo surgery.

- A cancer patient’s preoperative evaluation can be challenging because of the additional physiological burden that cancer and cancer treatments impose.

- Perioperative guidelines tend to view surgery as either elective or emergent. Cancer surgery tends to fall between these two extremes because it is often necessary and time sensitive. Additionally, tumor growth and treatment constraints can prevent implementation of optimal therapies.

- Cancer therapy may produce unavoidable side effects that require further investigation or treatment.
Preoperative Diagnostic Testing

• As with any patient, a complete and comprehensive history and physical, along with targeted testing, are essential in the preoperative evaluation.
  – Don’t go on a safari
• Conventional Wisdom: Don’t order it if it won’t change your decision to go to the operating room.
  – In cancer care, you will still go to the OR, but may have a chance to address some significant abnormalities before they go.
• EKG
• Chest X-ray
• The chem-everything:
  – Lytes, BUN, Creatinine, Glucose, CBC with diff, LFTS, TSH, Lipids, Calcium, Magnesium, Phosphorus, PT, PTT, albumin ...
  – Usually done at some point in the evaluative process, no need to repeat unless a derangement is suspected
Multiple Hit Hypothesis for Cancer Deconditioning


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Case Presentation

• Nyota Uhura is 70 year woman with Non Small Cell Lung Cancer with metastatic disease to the bones. Past medical history of well controlled hypertension and diabetes.
• Previously active, retired communications officer
• Received chemotherapy 2 months ago and had an impending pathologic fracture requiring hip surgery
• 72 hours out from hip surgery complains of chest pain at 1 AM
Case Presentation II

- CT Angiogram negative for pulmonary embolism
- EKG done shows new finding of Q waves in the lateral leads
- Troponin T is 496 ng/L (Ref Range <18 ng/L)
- What in blazes is this?
Case Presentation III

• Ms. Uhura received Pembrolizumab (Keytruda) an immune checkpoint inhibitor two months prior to surgery

• What in space are Immune Checkpoint Inhibitors?
Immune Checkpoint Inhibitors

• T-cell have negative regulatory pathways or “checkpoints” to prevent runaway immune system.
• Cancers have figured out a way to enhance the negative regulatory pathways.
• Checkpoints of CTLA-4 and PD-1 pathways are inhibited by immunotherapy
• T-cells no longer handicapped and kill cancer cells.
• But sometimes don’t just stop at killing cancer cells ...
Perioperative Implications of Immunotherapy

- Immune Related Adverse Effects (irAEs)
- Latin name for organ/system + “itis”
- Pruritis, dermatitis, colitis, hepatitis, pancreatitis, thyroiditis, hypophyistis, adrenal insufficiency, pneumonitis, renal failure, myasthenia gravis, uveitis, episcleritis, GBS, neuropathy, meningitis, encephalitis, transverse myelitis, myocarditis, pericarditis, arthritis, myositis
Immune Related Adverse Effects

- Dermatologic: First few weeks
- Diarrhea & colitis: weeks 5 to 10
- Hepatitis: weeks 7 to 14
- Hypophysitis: week 6 +
- Pneumonitis: week 12+
- Up to 24 weeks out, unpredictable
- High index of suspicion needed
- Recognize and call for help!
Perioperative Evaluation of the Cancer Patient

CARDIOVASCULAR
Chemotherapy and Cardiomyopathy

• A well-known complication of chemotherapy is development of dilated cardiomyopathy with typical signs & symptoms of ventricular dysfunction:
  – Dyspnea
  – Peripheral edema
  – Jugular venous distention
  – Pulmonary edema

• The risk of developing cardiomyopathy is dose-dependent and varies for each agent.

• The risk of developing cardiomyopathy also depends on several other factors, including:
  – preexisting cardiac disease/cardiomyopathy
  – other chemotherapeutic agents
  – radiation therapy to the chest.

• Patients with treatment related cardiomyopathy should be considered for evaluation by a cardiologist who knows the patient is a surgical candidate.

# Cardiac Side Effects of Chemotherapy

<table>
<thead>
<tr>
<th>Anthracyclines</th>
<th>Taxanes</th>
<th>Monoclonal Antibodies</th>
<th>Tyrosine Kinase Inhibitors</th>
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<th>Alkylating Agents</th>
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<tbody>
<tr>
<td>Daunorubicin</td>
<td>Paclitaxel</td>
<td>Trastuzumab</td>
<td>Imatinib</td>
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**Cardiomyopathy**

**Ischemia**

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<td>Vinblastine</td>
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<td>Capecitabine</td>
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<td>Sorafenib</td>
<td>Vincristine</td>
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<td>Gemcitabine</td>
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<td>Epirubicin</td>
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<td>Vinorelbine</td>
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<td>5-Fluorouracil</td>
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**Arrhythmias/QT Prolongation**

<table>
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<td>5-Fluorouracil</td>
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<td>Sorafenib</td>
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What is targeted chemotherapy?

- Targeted cancer therapies are drugs or other substances that block the growth and spread of cancer by interfering with specific molecules involved in tumor growth and progression.
- Because scientists call these specific molecules “molecular targets,” therapies that interfere with them are sometimes called “molecularly targeted drugs,” “molecularly targeted therapies,” or other similar names.
- Targeted cancer therapies that have been approved for use in specific cancers include drugs that interfere with cell growth signaling or tumor blood vessel development, promote the specific death of cancer cells, stimulate the immune system to destroy specific cancer cells, and deliver toxic drugs to cancer cells.

http://www.cancer.gov/cancertopics/factsheet/Therapy/targeted

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Common Targeted Therapies

• Selective Estrogen Receptor Modulators
  – Tamoxifen, Toremifene
• Aromatase Inhibitors
  – Anastrozole, Exemestane, Letrozole
• Monoclonal Antibodies (Mabs)
  • Cetuximab, Bevacizumab, Pertuzumab, Trastuzumab
• Tyrosine Kinase Inhibitors (Nibs)
  • Dasatinib, Erlotinib, Lapatinib, Imatinib, Sunitinib

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## Chemotherapy Associated with Ischemia

<table>
<thead>
<tr>
<th>Drug</th>
<th>Drug</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capecitabine</td>
<td>Paclitaxel</td>
</tr>
<tr>
<td>5-Fluorouracil (5-FU)</td>
<td>Docetaxel</td>
</tr>
<tr>
<td>Gemcitabine</td>
<td>Bevacizumab</td>
</tr>
<tr>
<td>Vincristine</td>
<td>Erlotinib</td>
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<tr>
<td>Vinblastine</td>
<td>Sorafenib</td>
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<tr>
<td>Vinorelbine</td>
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</table>


Radiation Therapy and the CV system

- Radiation therapy to the chest may result in several different forms of cardiovascular disease.
- Radiation triggers endothelial proliferation, which accelerates atherosclerosis, and microvascular ischemia and fibrin deposition, which cause fibrosis of the pericardium, myocardium, conduction system and cardiac valves.
- Most cardiovascular complications of radiation develop over several months to several years.
- Combining radiation with chemotherapeutic agents that also have cardiovascular side effects poses an additional risk for developing cardiac disease.
- Radiation therapy to the head and neck area for oropharyngeal or thyroid cancers may accelerate carotid artery disease.
  - Preoperative evaluation of carotid artery disease is indicated if the patient has experienced cerebral ischemia or infarcts


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## Radiation Therapy Effects

<table>
<thead>
<tr>
<th>Cardiac condition</th>
<th>Symptom</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute pericarditis</td>
<td>Chest pain</td>
<td>Electrocardiography; Echocardiography</td>
</tr>
<tr>
<td>Constrictive pericarditis</td>
<td>Dyspnea, Edema</td>
<td>Echocardiography; Computed tomography of chest</td>
</tr>
<tr>
<td>Coronary atherosclerosis</td>
<td>Chest pain, Dyspnea</td>
<td>Electrocardiography Stress testing; Cardiac catheterization</td>
</tr>
<tr>
<td>Valvular stenosis and regurgitation</td>
<td>Chest pain, Dyspnea</td>
<td>Echocardiography</td>
</tr>
<tr>
<td>Restrictive cardiomyopathy</td>
<td>Dyspnea, Edema</td>
<td>Echocardiography</td>
</tr>
<tr>
<td>Conduction system defects</td>
<td>Dizziness, Syncope</td>
<td>Electrocardiography</td>
</tr>
</tbody>
</table>
Evaluation of Cardiac Disease

Symptoms of cardiovascular disease?
- No → No further cardiovascular testing
- Yes → Symptoms new since cancer therapy?
  - No → Perform cardiovascular testing using general criteria
  - Yes → Received cancer therapy with potential cardiovascular toxicity?
    - No → No further cardiovascular testing if symptoms primarily related to decreased exertional tolerance from treatment.
    - Yes → Target cardiovascular testing to specific symptoms & cardiovascular complications of patient’s cancer therapy

<table>
<thead>
<tr>
<th>Syndrome</th>
<th>Causative Agents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myocardial ischemia</td>
<td>Chest radiation, 5-FU, vincristine, vinblastine</td>
</tr>
</tbody>
</table>
| CHF                     | Chest radiation (constrictive pericarditis, restrictive cardiomyopathy)
                        | anthracyclines, taxanes, tyrosine kinase inhibitors (dilated cardiomyopathy) |
| Arrhythmia              | Chest radiation (heart block)
                        | thalidomide (sinus bradycardia)                        |
| Murmur                  | Chest radiation (valvular stenosis & regurgitation)   |

- Coronary evaluation
- Echocardiogram
- ECG
- Electrophysiology evaluation
- Echocardiogram
Take Home Points

• If a previously fully functional patient would not qualify for noninvasive testing in the weeks preceding diagnosis and treatment, then further testing would likely NOT add to his/her risk stratification.

• However, if the same patient has received cardiotoxic chemotherapy or radiation to the thoracic area and has a decreased functional capacity compared to before cancer therapy, then further testing may be indicated to uncover a cardiomyopathy or myocardial ischemia.

• Patients with chemotherapy-induced cardiomyopathy should receive the same medical management as any patient with systolic left ventricular dysfunction:
  – ACE inhibitor or angiotensin receptor blocker therapy
  – Beta-blocker therapy
  – Diuretics as needed to maintain normal volume status
Perioperative Evaluation of the Cancer Patient

PULMONARY
# Pulmonary Side Effects of Chemotherapy

## Bronchospasm/Hypersensitivity Reactions

<table>
<thead>
<tr>
<th>Anthracyclines</th>
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<td>Vinblastine</td>
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<td>Docetaxel</td>
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<td>Busulfan</td>
<td>Procarbazine</td>
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<td>Panitumumab</td>
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<td>Cetuximab</td>
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## Interstitial Lung Disease (Pneumonitis/Fibrosis)

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<td>Trastuzumab</td>
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<td>Oxaliplatin</td>
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<td>Ofatumumab</td>
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## Pleural Effusions

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</table>
Perioperative Pulmonary Issues

• Limited role for PFTs
• Optimize COPD/Emphysema
  – Consider pulmonary rehab
• Stop Smoking
• Preoperative thoracentesis for symptomatic effusions
• Lung Expansion post op
• Pulmonary Hypertension emerging risk factor
• Obstructive Sleep Apnea
• Lowest Fi02 for those with hx of bleomycin
Perioperative Evaluation of the Cancer Patient

GI SYSTEM
Gastrointestinal Disease

• Patients with cancer involving the liver or other parts of the gastrointestinal tract are at high risk for complications of gastrointestinal disease.
• Even patients with non-gastrointestinal cancer may develop hepatic and intestinal complications that impact their care in the perioperative period.
  – Malnutrition
    • *Due to malabsorption and nausea*
  – Anemia
    • *Due to bleeding from cancer + malabsorption with vitamin deficiencies*
  – Coagulopathy
    • *Due to malabsorption with vitamin deficiencies*
  – Typhlitis (neutropenic or necrotizing enterocolitis)
  – Recurrent aspiration pneumonia in the head and neck cancer patient
  – radiation enterocolitis with gastrointestinal bleeding
Nutrition

• Preoperative evaluation by a nutrition specialist may be helpful in optimizing a patient’s nutritional status.
• Total parenteral nutrition (TPN) and enteral nutritional supplementation may be needed to maintain or optimize nutritional status prior to surgery.
Hepatic Disease

• Whether primary or metastatic, hepatic cancer poses several problems of importance in the surgical patient:
  – Biliary obstruction
  – Coagulopathy
  – Malnutrition
• Patients with suspected biliary obstruction should undergo appropriate GI evaluation before surgery to determine the need for temporizing interventions, such as biliary stent placement, prior to surgery.
• Patients with cancer and underlying cirrhosis need thorough evaluation by a GI specialist if metabolic derangements from liver dysfunction are suspected.
• Criteria such as the CTP (Child-Turcotte-Pugh) score and the MELD (Model for End Stage Liver Disease) may assist in making surgical decisions.
• When coagulopathy or thrombocytopenia are identified, they should be treated with vitamin K and platelet transfusions to achieve an INR<1.5 and platelet count >50,000-100,000.
Hepatic Disease

• Several chemotherapy agents can also cause hepatotoxicity which may lead to coagulation abnormalities:
  – 5-FU
  – 6-mercaptopurine
  – ARA-C
  – Azathioprine
  – Carmustine
  – L-asparaginase
  – Methotrexate
  – Plicamycin
  – Streptozocin

• In addition to the complications previously mentioned, cancers or treatments that affect the liver may prohibit the use of some anesthetic agents that are metabolized through the liver.
Perioperative Evaluation of the Cancer Patient

ENDOCRINE
Endocrine Disease

• Patients with cancer may have multiple issues involving the endocrine system.
• Perioperative management of preexisting endocrine disease, especially diabetes mellitus (DM), may be complicated by the patient’s neoplastic disease.
• Additionally, the internist may be asked to address paraneoplastic problems, such as the syndrome of inappropriate antidiuretic hormone (SIADH) and hypercalcemia, or endocrine complications of cancer therapy.
• Neoplasms of the endocrine system such as thyroid cancer, adrenal tumors and the multiple endocrine neoplasia (MEN) syndromes are usually managed by the treating physician, and as such are beyond the scope of this presentation.
Diabetes Mellitus & Glucose

- Oncologic patients with preexisting DM may experience worsened glucose control for several reasons including:
  - Therapeutic prednisone
  - Nutritional changes
- Glycemic control may require escalation of DM therapy, including initiation of insulin therapy in patients previously managed with oral hypoglycemics.
- Additionally, previously undiagnosed DM may become manifest due to the same factors.
- Standard recommendations for diabetes management in the perioperative period also apply to cancer patients.
- Hypoglycemia may be seen in several types of cancer:
  - mesenchymal tumors
  - adrenocortical tumors
  - pancreatic non-islet cell tumors
  - hepatocellular carcinoma

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Paraneoplastic Disorders

Paraneoplastic disorders may be encountered in the cancer patient undergoing surgery.

SIADH

- SIADH may be seen in several cancers, including:
  - Lung carcinoma
  - GI malignancies
- The primary manifestation is hyponatremia.
- Hyponatremia does not require treatment if asymptomatic and mild; however, intravenous fluids require judicious management – usually minimization and avoidance of hypotonic fluids.

Cushing Syndrome

- Cushing syndrome from ectopic production of ACTH is seen in small cell lung cancer, pancreatic cancer, carcinoid, and thymic tumors.
- Typical presenting signs and symptoms include weight gain, hyperglycemia and fatigue.
Hypercalcemia of Malignancy

- A variety of conditions can lead to hypercalcemia in the cancer patient
- Tumors associated with hypercalcemia include:
  - breast cancer
  - nonsmall cell lung cancer
  - multiple myeloma
- Preoperative hypercalcemia requires a thorough work-up for causes.
- Treatment is necessary if the calcium level is sufficiently elevated (corrected serum calcium >11 mg/dl) or the patient is symptomatic:
  - Constipation
  - Nephrolithiasis
  - Altered mental status
- Treatment includes IV hydration and bisphosphonates.

### Causes of Hypercalcemia in Cancer Patients

- Tumor production of:
  - parathyroid hormone-related peptide
  - prostaglandins
  - osteoclast-activating factor

- Bone invasion by tumor

- Non-cancer-related conditions:
  - hyperparathyroidism
  - vitamin D toxicity
  - excessive calcium intake
Perioperative Evaluation of the Cancer Patient

RENAL
Renal Disease and Cancer

• Surgical, medical or radiation therapy for cancer can also induce renal dysfunction.
• Nephrectomy will result in a predictable decrease in renal function.
• Chemotherapeutic agents can cause nephrotoxicity leading to several complications.
  – Tumor lysis syndrome can occur with several different chemotherapies and is characterized by uric acid crystalization in the kidney tubules with subsequent renal failure.
  – Chemotherapies may also induce acute interstitial nephritis, tubular necrosis or glomerulonephritis.
  – Persistent electrolyte abnormalities (hypokalemia, hypomagnesemia) may occur.
• Radiation therapy rarely causes acute complications but may induce renal fibrosis or retroperitoneal fibrosis with ureteral obstruction.

## Renal Effects of Treatment

<table>
<thead>
<tr>
<th>Agent</th>
<th>Side effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisplatin, carboplatin</td>
<td>Nephrotoxicity is dose limiting; Hypomagnesemia can persist</td>
</tr>
<tr>
<td>Methotrexate</td>
<td>Nephrotoxicity due to precipitation in lumen is reversible</td>
</tr>
<tr>
<td>Ifosfamide</td>
<td>Proximal tubular dysfunction</td>
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<tr>
<td>Cyclophosamide</td>
<td>Hemorrhagic cystitis</td>
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Perioperative Evaluation of the Cancer Patient

HEMATOLOGY
Hematologic Disease

- Cancer patients undergoing surgery often have comorbid hematologic diseases.
  - Especially true of the liquid tumors (leukemia/lymphoma) undergoing surgery
- Most surgical patients with active cancer should be screened for bleeding disorders if a clinical suspicion exists.
- Anemia and thrombocytopenia should be fully evaluated to rule out causes other than cancer- and chemotherapy-induced bone marrow suppression.
- In general, RBC and platelet transfusion thresholds used for the non-cancer population should be followed for oncologic surgery patients.
- Additionally, presurgical administration of agents such as erythropoietin and GCSF is not indicated.
- VTE prophylaxis as appropriate per the guidelines

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Anemia and the Cancer Patient

• Anemia is extremely common in patients with cancer and is related to a number of factors:
  – Blood loss (i.e. colon cancer)
  – Malignancy-associated bone marrow suppression
  – Chemotherapy-induced bone marrow suppression
  – Hemolysis
• Reversible causes of anemia should be sought and treated prior to surgery the same as in the non-oncologic patient.
• Anemia from bone marrow suppression can be treated with erythropoietin, but this is of questionable benefit.
  – There is no evidence that preoperative administration of erythropoietin improves outcomes.
  – In fact, it may prove harmful as there is an increased risk of thromboembolic events.
Liquid Tumors requiring Surgery

• Leukocytosis (WBC >100,000/µl)
  – High morbidity and mortality
  – Leukostasis syndrome
    • Respiratory failure
    • Cerebrovascular occulsion
    • Bleeding and thrombosis
  – Infections

• Chemotherapy or Leukopheresis prior to surgery if possible
High Platelet Counts

• Thrombocytosis (Plt > 1,000,000/µl)
  – Chronic Myeloid Leukemia
  – Primary Myelofibrosis
  – Polycythemia Vera
  – Myelodysplastic Syndrome
  – Acute Myeloid Leukemia

• Anagrelide or Hydroxyurea

• Plateletpheresis in emergent situations
Perioperative Evaluation of the Cancer Patient
When the Guidelines Don’t Guide You

POST-OPERATIVE CARE
Cancer Surgery and VTE

Giancarlo Agnelli, MD, A Clinical Outcome-Based Prospective Study on Venous Thromboembolism After Cancer Surgery

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ASCO 2015 Perioperative VTE Prophylaxis Recommendations

- All patients with malignant disease undergoing major surgical intervention should be considered for pharmacologic thromboprophylaxis with either UFH or LMWH unless contraindicated because of active bleeding or a high bleeding risk.

- Prophylaxis should be commenced preoperatively.

- Mechanical methods may be added to pharmacologic thromboprophylaxis, but should not be used as monotherapy for VTE prevention unless pharmacologic methods are contraindicated because of active bleeding or high bleeding risk.

- A combined regimen of pharmacologic and mechanical prophylaxis may improve efficacy, especially in the highest risk patients.

- Pharmacologic thromboprophylaxis for patients undergoing major surgery for cancer should be continued for at least 7-10 days.

Extended VTE Prophylaxis

• Extended prophylaxis with LMWH for up to 4 weeks postoperatively should be considered for patients undergoing major abdominal or pelvic surgery for cancer who have high-risk features such as restricted mobility, obesity, history of VTE, or with additional risk factors as listed below. In lower risk surgical settings, the decision on appropriate duration of thromboprophylaxis should be made on a case-by-case basis considering the individual patient.

• Patient Related
  – Increased Age
  – African American
  – Co-Morbidities:
    • Infection, Renal disease, Pulmonary Disease, Arterial Thrombosis, Hx of VTE, inherited prothrombotic mutations.
  – Obesity
  – Performance Status

• Biomarkers
  – Platelet count > 350,000/mm3
  – Leukocyte count > 11,000/mm3
  – Hemoglobin <10 g/dl

Postoperative Infections in Oncologic Surgery Patients

- Cancer patients have an increased risk of postoperative infections due to several factors:
  - Immunosuppression (cancer- and chemotherapy-induced)
  - Malnutrition (cancer- and therapy-induced)
  - Intravascular devices (i.e. central venous ports for chemotherapy)
  - Increased likelihood of colonization with multidrug resistant bacteria from previous cancer-related hospitalizations
- Other factors unrelated to cancer contribute to infection risk in postoperative cancer patients
  - Obesity
  - Hyperglycemia
  - Advanced age
- The postoperative infections most commonly encountered in cancer patients:
  - Surgical wound infection
  - Pneumonia
  - Sepsis
  - Urinary tract infection
Prevention and Management of Postoperative Infections

• Postoperative infections can be prevented with a few simple strategies.
• Surgical Care Improvement Project (SCIP) based preoperative antibiotics for surgical wound prophylaxis
• Control of hyperglycemia
• Aggressive pulmonary toilet
• When infection develops, the following should be considered when making a treatment plan:
  – Coverage of multidrug resistant pathogens may required in empiric therapy.
  – Central venous ports or lines may need removal if line infection is suspected.
Poor Wound healing in Cancer Surgery Patients

• Surgical wound healing in cancer patients may be inhibited for a variety of reasons:
  – Lymphedema (common complication in those undergoing lymph node dissections)
  – Antiangiogenic agents given during chemotherapy
  – Radiation therapy at or near the surgical site
  – Malnutrition
  – Hyperglycemia
• Skin and muscle flaps are at particularly high risk for poor healing in the oncology population.
• Unfortunately, most of the contributors to poor wound healing in cancer patients are nonmodifiable.
• However, treatment of hyperglycemia, maximization of nutritional status, and other may improve cancer patient’s wound healing.
Shameless Promo

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References


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SHMConsults.com


UT MD Anderson Cancer and the Heart Webpage
https://www.mdanderson.org/research/departments-labs-institutes/departments-divisions/cardiology/conferences-events.html

Supporting evidence for some of the recommendations made in this presentation does not have a level of evidence consistent with that usually required for practice guidelines. The approach detailed herein is used by the Internal Medicine Perioperative Assessment Center at The University of Texas M. D. Anderson Cancer Center. As in therapeutic medicine, there are no hard and fast rules, and the recommendations presented here are the result of collaboration between various care providers at our institution.

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Thanks!

A heartfelt thank you!
—from Texas
END OF PRESENTATION