

association for surgical education

The Manual of Surgical Objectives



*A Symptom and
Problem-based Approach*

4th Edition

PREPARED BY

THE CURRICULUM COMMITTEE OF THE

ASSOCIATION FOR SURGICAL EDUCATION

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Preface



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"The Manual of Surgical Objectives: A Symptom and Problem-Based Approach"

has been written for students who are engaged in their first surgery rotation or clerkship. Most of these students will not choose surgery as a career, and for many, the surgery clerkship will be their only exposure to surgery. The purpose of this manual, therefore, is not to create "junior surgeons", but rather, to help all students navigate through the myriad of problems they will encounter on the surgical service. This manual is not exhaustive; it should compliment the basic surgical text - not substitute for it. Finally, we hope that this manual will serve as a guide for both surgical educator and student.

Several assumptions have guided the design of this manual.

Students can perform a history and physical exam.

Students will have basic science background from their medical school curriculum.

During the course of their surgery experience, students will participate in both in-patient and out-patient procedures.

Students should be focusing on the differential diagnosis and evaluation of patients' problems rather than the treatment.

Students will be focusing on principles of management rather than procedural details.

This manual contains 29 objectives (or chapter headings) that are symptom/problem based. Each chapter includes: basic cognitive assumptions, disease entities to consider, problems, skills, prevention issues, and teaching hints to enable the student to fully comprehend the scope of the problem. To facilitate use, the manual also includes a comprehensive index.

Our most sincere thanks go to members of the Association for Surgical Education Curriculum Committee for their hours of dedication to this project and to their commitment to the quality education of students.

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Abdominal Masses

Assumptions

Student is familiar with the normal location, size and consistency of the abdominal viscera.

Objectives

1. Describe the causes of hepatomegaly.
 - Discuss the role of liver function testing, radionucleotide imaging, ultrasound and CT scanning in the evaluation.
 - Discuss the most frequently encountered benign hepatic tumors and their management.
 - Discuss the most frequently encountered malignant hepatic tumors and their management.
 - Discuss the role of liver biopsy in the diagnosis and the available techniques.
2. Describe the causes of splenomegaly.
 - Discuss the most common signs and symptoms associated with hypersplenism.
 - Compare and contrast hypersplenism with an enlarged and normal sized spleen.
 - Discuss the role of splenectomy in the treatment of hypersplenism.
 - Discuss the consequences of hyposplenism. How can these be diminished?
 - Discuss the short and long term complications associated with surgical removal of the spleen.
3. Describe the differential diagnosis of a pancreatic mass.
 - Discuss the most useful diagnostic studies.
 - Discuss the relationship of the pancreatic duct to the common bile duct and how this may impact diagnosis and treatment of pancreatic lesions.
 - Discuss the indications and techniques of biopsy the pancreas.
 - Discuss the management of cystic lesions of the pancreas.
 - How do you differentiate a pseudocyst from a cystadenoma or true cyst?
 - Which patients need surgery and when?
 - What are the major complications of pancreatic necrosis and pseudocyst formation?
4. Describe the most frequently encountered retroperitoneal masses.
 - Discuss the appropriate imaging studies and work up for these tumors.
 - Discuss the most frequently encountered lymphomas and their treatment.
 - Discuss the most common retroperitoneal sarcomas and their management.

5. Describe the evaluation and management of abdominal aortic aneurysms.
 - Discuss appropriate imaging studies for aneurysms.
 - Discuss which patients need angiograms.
 - Discuss the relationship of aortic aneurysms to other vascular aneurysms.
 - Discuss how to determine which patients need surgical repair of the aneurysm.
 - Discuss the risks of surgical treatment and the risks of the aneurysm left untreated.
6. Describe the tumors most frequently associated with abdominal carcinomatosis and omental metastasis.

Problems

1. A 32-year-old woman presents with abdominal pain and a right upper quadrant mass. She is on birth control pills, has known gallstones and a past history of hepatitis B infection.
 - What is the most appropriate diagnostic work-up?
 - How do you differentiate an adenoma of the liver from hepatocellular carcinoma?
 - Does the presence or absence of cirrhosis impact your therapeutic decisions?
 - Do you remove an asymptomatic gallbladder with stones?
2. A 45-year-old alcoholic man is admitted with a week of nausea and vomiting. Evaluation reveals a mass in his epigastrium which is tender. Ultrasound shows a 7 cm. cystic mass.
 - What is the differential diagnosis?
 - Does the patient need antibiotic therapy for a pseudocyst? Why / why not?
 - What is the initial management of this patient?
 - How do you decide if he needs operative therapy and when is the appropriate timing?
 - What are the treatment options for drainage of a pseudocyst?
3. An 82-year-old man is brought to the emergency room with hypotension, back pain and a known history of aortic aneurysm.
 - What are the initial management priorities for this patient?
 - What, if any, diagnostic studies should be performed?
 - What is the expected mortality rate if this represents a rupture of the aneurysm?
 - What are the major complications associated with aneurysm rupture and repair?

Skills

1. Perform a complete abdominal, rectal and pelvic exam.
2. Interpretation of abdominal and pelvic CT scans and ultrasound.

Prevention

1. Understand the importance of hepatitis C and B prevention in relation to hepatoma.
2. Appropriate screening for aneurysm disease prior to age 60 in patients with a family history of aortic aneurysm.
3. Discuss the short and long term complications associated with surgical removal of the spleen.

Abdominal Pain

Assumptions

Students understand: the anatomy and relationships of various abdominal viscera; the normal structure and function of various abdominal viscera and their associated organ systems; the physiology of pain perception and how to apply this to differentiating visceral, somatic and referred pain patterns involved in abdominal pathology. Students have a basic understanding of the pathophysiology of inflammation, neoplasia, ischemia and obstruction.

Objectives

1. Gather a complete or problem focused history for various patients presenting with abdominal pain. Emphasis will be placed on:
 - characterization of pain (location, severity, character, pattern)
 - temporal sequence (onset, frequency, duration, progression)
 - alleviating/ exacerbating factors (position, food, activity, medications)
 - associated signs / symptoms (nausea vomiting, fever, chills, anorexia, wt. loss, cough, dysphagia, dysuria/frequency altered bowel function (diarrhea, constipation, obstipation, hematochezia, melena, etc.)
 - pertinent medical history: prior surgery or illness, associated conditions (pregnancy, menstrual cycle, diabetes, atrial fibrillation or cardiovascular disease, immunosuppression). Medications: anticoagulation, steroids etc.

2. Demonstrate the components of a complete abdominal examination including rectal, genital & pelvic examinations.
 - Relate the significance of the various component examinations: observation, auscultation, percussion, palpation as they apply to common abdominal pathologic processes. *Examples: distention, visible peristalsis, high pitched or absent bowel sounds, tympany, mass, localized vs. generalized guarding and/or rebound tenderness.*
3. Demonstrate and relate the significance of various maneuvers utilized in evaluating acute abdominal pain. *Examples: iliopsoas sign, Rovsing's sign, obturator sign, Murphy's sign, cough tenderness, heel tap, cervical motion tenderness.*
4. Describe the keys to successful examination of infants and children with abdominal pain. Characterize examination skills that may be utilized in pregnancy, or patients with altered neurologic status.
5. Develop a differential diagnosis for various patients presenting with acute abdominal pain. Differentiate based on:
 - location: RUQ, epigastric, LUQ, RLQ, LLQ
 - symptom complex: examples: periumbilical pain localizing to RLQ, acute onset left flank pain with radiation to the testicle etc.
 - age: pediatric, adult, geriatric
 - associated conditions: pregnancy, immunosuppression (AIDS, transplant, chemotherapy / radiation therapy)
6. Explain the rationale for utilizing various diagnostic modalities in the evaluation of abdominal pain.
 - Laboratory: CBC, amylase, electrolytes, BUN, creatinine, glucose, urinalysis, beta-HCG, liver profile.
 - Diagnostic imaging: flat and upright abdominal radiographs, upright chest X-ray, abdominal ultrasonography, CT scan of abdomen and pelvis, GI contrast radiography, angiography, IVP.
 - Special diagnostic / interventional techniques: upper endoscopy, procto-sigmoidoscopy, colonoscopy, laparoscopy.
7. Discuss the presentation, diagnostic strategy, and initial treatment of patients presenting with common or catastrophic abdominal conditions.
 - acute appendicitis
 - cholecystitis / biliary colic / choledocholithiasis / cholangitis
 - pancreatitis
 - peptic ulcer disease with & without perforation
 - gastroesophageal reflux
 - gastritis / duodenitis
 - diverticulitis
 - inflammatory bowel disease

- enterocolitis
 - small bowel obstruction: incarcerated hernia, adhesions, tumor
 - colon obstruction: volvulus, tumor, stricture
 - splenomegaly / splenic rupture
 - mesenteric ischemia
 - leaking abdominal aortic aneurysm
 - gynecologic etiologies: ectopic pregnancy, ovarian cysts (torsion, hemorrhage, rupture) tubo-ovarian abscess, salpingitis, endometriosis
 - genito-urinary etiologies: UTI, pyelonephritis, ureterolithiasis, testicular torsion
8. Discuss the common non-surgical conditions that can present with abdominal pain *Examples: MI, pneumonia, pleuritis, hepatitis, gastroenteritis, mesenteric adenitis, sickle cell crisis, DKA, herpes zoster, nerve root compression.*
 9. Compare and contrast acute appendicitis in young adults, the very young, very old, and pregnant women. Discuss issues relevant to presentation, diagnosis, treatment, complications etc. Example: perforation risk.
 10. Discuss the diagnosis and treatment of abdominal problems with particular relevance to the pediatric population. Include: neonates, infants, children, adolescents. Be able to list the abdominal problems, characteristic of each group, and outline diagnostic and intervention strategies for:
 - Congenital: hernias, malrotation, midgut volvulus
 - Hirschsprung's disease
 - Pyloric Stenosis
 - Intussusception
 - Meckel's diverticulitis
 - Child abuse
 11. Discuss unique causes of abdominal pain in patients who are immune-suppressed and the implication on treatment and outcomes. *Examples: neutropenic enterocolitis, CMV enterocolitis, bowel perforation, acalculous cholecystitis, acute graft rejection.*
 12. Discuss the approach to patients with common abdominal problems with emphasis on indications for surgical consultation, indications / contraindications to surgery, complications of disease and intervention, and expected outcomes. Examples: laparoscopy vs. laparotomy; complication rates of emergent vs. elective surgery, perforated vs. non-perforated colon cancer; complications: intra-abdominal abscesses, fistulae, bleeding, anastamotic disruption.
 13. Describe the normal bacterial flora of the GI, GU and GYN systems and compare to pathologic infections.
 - Discuss appropriate antibiotic therapy where indicated in various conditions manifesting with abdominal pain.
 14. Discuss the approach to patients with postoperative abdominal pain. Contrast findings in non-operated patients with regards to:

- presentation
 - examination
 - differential diagnosis
 - intervention strategies
15. Discuss the unique considerations and constraints in the evaluation of patients with abdominal pain in various environments:
- emergency room
 - outpatient clinic or office
 - government facility
 - managed care organization.
16. Describe the resources available for readily accessing information to evaluate patients with abdominal pain. *Examples: Internet access sites, textbooks, pocket handbooks, journal articles.*
- Compare and contrast based on information quality, timeliness, accessibility.

Problems

1. A 14-year-old boy is seen in the Emergency Room with a 12 hour history of abdominal pain. He awoke this morning with a vague "stomach ache" and did not feel like eating breakfast. This afternoon he complained of more severe pain on the right side of his abdomen. Abdominal examination reveals moderate tenderness maximally on the right side of the abdomen and in the right flank. Laboratory findings show Hb 15.1 and hematocrit 48. WBC count is 12,500 with 50 segs, 27 bands, 15 leukocytes, 6 monocytes, 1 eosinophil. Urinalysis was normal except for 10-15 WBC's and 5-10 RBC's /HPF.
- What is the most likely diagnosis?
 - What other diagnoses should be considered?
 - Are there any atypical findings in this case? Can they be explained?
 - Are there any further diagnostic tests that should be done?
 - How would you manage this patient?
 - Are there alternatives to your proposed treatment?
 - What are some of the other causes of acute abdominal pain? Do all these entities require surgical intervention?
 - Outline your approach to the evaluation and management of a patient with acute abdominal pain.
2. A 72-year-old obese diabetic female presents to the office with a 3 day history of steady lower abdominal pain, fever, and urinary frequency. Recently, she has noted alternating periods of diarrhea and constipation. Prior history includes a prior hysterectomy, and appendectomy. Office exam reveals an obese female in moderate distress with a temperature of 102°F. Marked local tenderness is noted in the left lower quadrant and suprapubic area without guarding or rebound. There is the suggestion of a mass in this area. Rectal exam shows marked tenderness in the left pelvic area.
- What is the probable diagnosis in this patient and what should be done to manage her?

- If she would respond to non-operative management with resolution of pain, disappearance of mass, and resolution of her fever, what dietary and medication regimens would you advise for her long term?

Two days after admission, she in fact does not improve. She complains of severe lower abdominal pain and is found to have bilateral lower quadrant tenderness with guarding and rebound. Her WBC count increases from 12,500 on admission to 18,800 with 20% bands.

- What do you think has happened? Would you order any tests to confirm this suspicion?
- Do you think an operation should be performed? If so what kind of procedure is indicated?
- Which antibiotics are indicated?
- Discuss abdominal wound management in cases such as this.
- What postoperative complications might one anticipate?

Skills

1. Focused history and physical examination including rectal/genital/and pelvic examinations with emphasis on characterization of findings, differentiation of signs/symptoms of peritonitis and adjunctive maneuvers to enhance diagnostic abilities.
2. Interpretation of laboratory findings and various imaging modalities that contribute to the diagnosis of common abdominal problems. Consider plain films of the abdomen, CT scans , ultrasound etc.
3. Placement of:
 - nasogastric tubes
 - peripheral intravenous catheters
 - venipuncture & insertion of Foley catheters
 - composition of appropriate admission orders as part of the initial assessment and care of patients with acute abdominal pain

Abdominal Wall & Groin Masses

Assumptions

The students understands the anatomic relationships of the abdominal wall musculature and fascia.

Objectives

1. Discuss the differential diagnosis of inguinal pain, mass or bulge.
 - consider hernia, adenopathy, muscular strain
2. Describe the anatomic differences between indirect and direct hernias.
3. Discuss the relative frequency of indirect, direct and femoral hernias by age and gender.
4. Discuss the clinical conditions that may predispose to development of inguinal hernia.
5. Discuss the indications, surgical options, and normal post-operative course for:
 - inguinal hernia repair
 - femoral hernia repair
6. Define and discuss the clinical significance of incarcerated, strangulated, reducible and Richter's hernias.
7. Discuss the differential diagnosis of an abdominal wall mass.
 - consider desmoid tumors, neoplasm, hernia, adenopathy, and rectus sheath hematoma
8. Describe the potential sites for abdominal wall hernias.
 - consider incisional, umbilical, inguinal, femoral, Spigelian, and epigastric
 - differentiate diastasis recti from abdominal hernia
9. Compare the natural history and treatment of umbilical hernia in children and adults.
10. Describe clinical factors contributing to the development and repair of an incisional hernia.
11. Outline the management of an abdominal wall desmoid.

Problem

A 62-year-old male presents with a two month history of intermittent pain and bulging in the left inguinal region. A reducible hernia is noted on exam.

- What further data should be obtained from the patient's history and physical exam?
- What are the management options?
- What are the risks of operative and non-operative management?
- What is the usual post-operative course and physical findings?

Skills

1. Focused H&P to include abdominal, rectal and genital exams.
2. Confirm reducibility or incarceration of an abdominal wall hernia.

Prevention

Role of surgical repair in prevention of hernia complications.

Altered Neurologic Status

Assumptions

Students understand basic central and peripheral neurological anatomy and function, including: cross sectional anatomy, histology, gross anatomy, and sensory/motor endpoints.

Objectives

1. Describe the physiology of intracerebral pressure (ICP) and cerebral perfusion pressure (CPP), including the effects of blood pressure, ventilatory status, and fluid balance on ICP and CPP.
 - Recognize the Cushing reflex and its clinical importance (brain herniation).
2. Discuss the diagnosis and management of the patient with headaches.
 - Describe the signs, etiology and treatment of intracranial hemorrhage (subarachnoid hemorrhage and intracerebral hemorrhage).
 - Describe the relative incidence and location of the most common brain tumors, their clinical manifestations, their diagnosis, and general treatment strategies.
 - Differentiate brain abscesses from tumors, and discuss the treatment of intracranial infections.
3. Describe the evaluation and management of a patient with an acute focal neurologic deficit.
4. Differentiate TIA, RIND, and CVA.
 - Differentiate anterior vs. posterior circulation symptoms.
 - Outline the diagnostic tests and monitoring of carotid occlusive disease, including role of angiography and noninvasive methods.
 - Discuss medical vs. surgical management of carotid artery disease.
5. Describe the signs, symptoms, and treatment of common peripheral nerve entrapment syndromes, as well as other nerve injuries.
6. Describe the presentation and management of hydrocephalus.
 - Compare and contrast adult and pediatric hydrocephalus.
7. Discuss the role of surgery in the management of pain, movement, and seizure disorders.

Problems

1. A 60-year-old patient presents with transient monocular blindness.
 - How will you evaluate this patient's neurologic status?
 - Describe the importance of a fundoscopic exam.
 - Develop a differential diagnosis, evaluation and treatment plan.
 - What are the risks of carotid endarterectomy?
2. A 38-year-old arrives in your office complaining of a severe headache.
 - What historical and physical findings are important?
 - When would you order a CT scan?
 - When to obtain a neurosurgical consult (emergent or "routine")?
3. A 45-year-old arrives in your office with complaints of numbness, tingling, and weakness in the (dominant) right hand.
 - How would you proceed with your history, physical examination, and diagnostic evaluation?
 - What lesions are possible? How do you differentiate and treat them?

Skills

1. Perform a focused neurological history and examination.
2. Interpret various neurologic imaging studies (CT scans, MRI, x-rays).

Prevention

1. Students will understand the importance of blood pressure control in the prevention of stroke.
2. Students will understand the importance of early diagnosis and treatment in subarachnoid hemorrhage.
3. Students will understand the importance of appropriate diagnosis, management, referral in the prevention of complications of carotid occlusive disease.

Asymptomatic Patient with Positive Test

Assumptions

The student understands the concepts of test sensitivity, specificity, false negative and false positive rates, positive and negative predictability, and prior probability.

Elevated PSA

Objectives

1. Understand the significance of the PSA and its implications for screening, diagnosis, and follow-up.
2. What is the sensitivity and specificity of the PSA for detecting prostatic cancer.
3. Discuss the use of the PSA in screening healthy adults.
4. When should it be used?
5. How often should it be done?

Problem

A 50-year-old man is referred for your evaluation. On routine screening with his internist he was found to have an elevated PSA. He wants to know what to do now.

- What more do you need to know about the patient?
- Discuss the differential diagnosis.
- What are the indications for prostate biopsy?
- What is the role of ultrasound in the evaluation?

Prostate Nodule

Objectives

1. Understand the significance of a prostatic nodule, its differential diagnosis, evaluation, and treatment.
 - Discuss the differential diagnosis.
 - Discuss the evaluation of a nodule.
 - role of ultrasound
 - role of biopsy
 - different biopsy techniques
2. Discuss the staging of cancer of the prostate.
3. Discuss treatment options for cancer of the prostate.

Problem

On routine exam for rectal bleeding you find a 0.5 cm hard nodule on the left lobe of the patient's prostate. The patient is a 75-year-old gentleman with mild coronary artery disease who is compensated on medication.

- How would you evaluate this patient?
- Pathology reveals an adenocarcinoma; what are the next steps?

Gallstones

Objectives

1. Understand the natural history of symptomatic and asymptomatic gallstone disease.
2. Define "symptomatic" in the context of gallstone disease.
3. Discuss the available literature on the natural history of asymptomatic gallstones.
4. Discuss the indications for cholecystectomy.
5. Discuss the options, pros and cons, for treatment of gallstones:
 - cholecystectomy
 - dissolution therapy
 - watchful waiting
6. Discuss impact of associated medical conditions on the decision to treat gallstones.
7. Discuss the association of cancer of the gallbladder and gallstones.

Problem

A 70-year-old woman is referred by her internist for evaluation of gallstones. She has a history of nausea and heartburn for the past 6 months not specifically related to meals or time of day. An UGI was normal and an ultrasound shows multiple calculi, with normal size duct and she has normal LFT's.

- What do you recommend?
- Does your recommendation change if she has Type II diabetes mellitus?
- What if she had a single stone 3.5 cm in size?
- What if the patient were a 55 year-old man?

Carotid Bruit

Objectives

1. Understand the significance of a carotid bruit found in an asymptomatic person and how and when to further evaluate it.
2. What is the significance of a bruit?
3. What are the symptoms of carotid disease?
4. How should a patient with a carotid bruit be evaluated?
5. What are the available treatments for carotid disease and what are their indications?

Problem

On your exam to evaluate an 80-year-old gentleman for rest pain of his right foot you discover a left carotid bruit. He has a history of Type II diabetes mellitus and mild hypertension for which he takes an oral hypoglycemic agent and an ACE inhibitor. He is right handed and denies any history of headache, dizziness, difficulty speaking, visual disturbance, etc. It is clear that he will need something done for his rest pain. What do you do about the carotid bruit?

- What points in the history do you need to know?
- What studies should be done?
- What are the indications for operative intervention?
- What is the best timing for the operation if it is indicated?

Hypercalcemia

Objectives

1. Discuss and understand calcium homeostasis.
2. Understand the symptoms and signs of acute and chronic hypercalcemia.
3. Discuss the differential diagnosis of hypercalcemia.
4. Discuss the evaluation and management of hypercalcemia

Problem

While evaluating a 60-year-old woman for epigastric pain, you receive a serum calcium of 11 mg/dl. She has a long history of epigastric discomfort for which she takes antacids. She also has mild hypertension for which she takes hydrochlorothiazide and on your exam you find a small rubbery mass in the LUOQ of her breast.

- What are the possible causes of her hypercalcemia?
- What other history and physical findings would you like to know?
- What is the next step?
- Would you proceed differently if she was known to have peptic ulcer disease?

Incidental Mass on Computer tomography

Objectives

1. Discuss the differential diagnosis of incidental masses of:
 - Adrenal gland
 - Liver
 - Kidney
2. Discuss the further evaluation of the mass.

Skills

1. Evaluate literature and apply findings to the particular case under discussion.
2. Use specificity, sensitivity, prior probability in making care decisions.

Back Pain

Assumptions

1. Students have a working knowledge of musculoskeletal anatomy of the spine.
2. Students have a basic understanding of disease spread (neoplastic, infectious).

Objectives

1. Elicit history and physical exam finding that permits a focused evaluation of back pain. Incorporate a detailed neuromuscular assessment.
2. Describe the key manifestations of various back pain syndromes. Consider: acute vs. chronic, age and gender, occupational & recreational risk factors.
3. Recognize radicular pain symptoms (herniated disc) and correlate neurologic findings with neuroanatomic level of disease.
4. Develop a differential diagnosis, initial evaluation and treatment strategies for:
 - herniated disc
 - spondylosis / spondylolisthesis
 - scoliosis
 - osteoporosis & degenerative disc disease
 - primary & metastatic tumors of the spine
 - infectious: osteomyelitis, epidural and paraspinal abscess
 - traumatic (musculoskeletal strain, vertebral fractures/dislocation ► cord injury)
 - retroperitoneal sources (aortic aneurysm, GU sources, pancreatic disease).
5. Discuss the use of diagnostic studies available for evaluation of back and leg pain. Include spine radiographs, CT scan, MRI, bone scan, myelography, angiography.
6. Discuss the indications for surgical consultation and treatment in problems addressed above.
7. List potential complication of surgery on the spine as well as unique concerns for perioperative management and rehabilitation / recovery.

Problems

1. A 42-year-old woman bends over to pick up a large potted plant and drops to the ground with severe pain in the lower back. In the ER she is in obvious distress and describes a sharp pain radiating down her right buttock and leg.
 - What other questions you would like to ask regarding her history?

- What other findings do you expect on physical examination?
 - What, if any, diagnostic tests are indicated?
 - What would be your initial management options?
 - Would your approach differ if she had numbness of the lateral leg and diminished DTRs? Loss of bowel and bladder control?
2. A 68-year-old man presents with back pain and weight loss. He notes a decline in physical activity over the past 4-5 months associated with a boring constant pain in his mid-back. He considers himself otherwise healthy and hasn't seen a physician in 3 years.
- What else do you want to know?
 - What is the significance of night pain associated with back pain?
 - What if his exam revealed only an enlarged prostate with a palpable mass in the right lobe?
 - What if his exam revealed a firm masses in the epigastrium that was non-pulsatile?
 - What would your diagnostic approach be in each circumstance?
 - What are your options for pain relief? Treatment?

Skills

1. Demonstrate a focused musculoskeletal and neurologic exam. Include straight leg testing and scoliosis evaluation.
2. Interpret plain films of the back, CT and MRI findings of common entities presenting with back symptoms.

Prevention

1. Describe methods for preservation of back function occupationally and during leisure activities as part of healthy lifestyles
2. Encourage screening studies for at risk populations: PSA, AAA, and osteoporosis

Breast Problems

Assumptions

Student understands benign changes within the breast and their relevance to breast cancer surveillance. Student understands the topographic and structural anatomy of the breast. Student understands the hormonal changes that effect the breast.

Objectives

1. Develop a differential diagnosis for a 20-year-old patient with breast mass and a 45- year-old patient with breast mass. Consider benign vs. malignant, abscess.
2. Describe the diagnostic work-up and sequence:
 - Discuss importance of the patient's history: estimated duration of illness, nipple discharge, breast cancer risk factor assessment.
 - Discuss physical findings to look for.
 - Discuss in-office procedures for evaluation and treatment (FNAC, needle aspiration, incision & drainage, core needle biopsy) and their diagnostic/therapeutic implications.
 - Discuss the importance of such breast imaging studies as ultrasound and mammography.
3. Discuss the diagnosis and management of the patient with an abnormal mammogram (consider microcalcifications)
4. Discuss the rationale for management with specific emphasis on:
 - Clinical staging of breast CA
 - The various possible malignant, pre-malignant, and benign pathology results (including hormonal receptor analysis, tumor DNA analysis)
 - The follow-up for a patient with a benign lesion (alterations in lifestyle, imaging studies, cancer risk)
 - The role of incision and drainage and antibiotics in breast abscess treatment.
 - Current recommendations for screening mammography.
 - Therapeutic options for the patient with breast CA
 - role of surgery/when to consult a surgeon for further diagnosis & treatment
 - role of radiotherapy
 - role of chemotherapy (adjuvant or neoadjuvant)
 - role of hormonal therapy
 - surgical options including reconstruction

Problems

1. A 35-year-old pregnant patient was referred by her obstetrician for a right upper outer quadrant breast lump. The patient has a positive family history of breast CA.
 - What pertinent questions regarding patient's history and current symptoms should be asked?
 - What diagnostic tests are the best options for this patient?
 - What is the most likely diagnosis?
 - What special considerations should be given to a pregnant patient considering a biopsy?
2. A 65-year-old woman was referred to the surgeon from her family practitioner with skin dimpling in the lower outer quadrant of her left breast.
 - What pertinent questions regarding patient's history and current symptoms should be asked?
 - What diagnostic tests are the best options for this patient?
 - What is the most likely diagnosis?
 - What special considerations should be given to a pregnant patient considering a biopsy?

Skills

1. Focused H&P related to breast problems (including palpation of lymph node regions)
2. Identifying location and character of nipple discharge.
3. Technique of needle aspiration (both for cyst and cytology).
4. Technique of incision & drainage.

Prevention

1. Stress current recommendations for screening mammography.
2. Stress importance of self-exam.

3. Discuss hormone replacement therapy.
4. Discuss role of genetic screening.

Chest Pain & Shortness of Breath

Assumptions

The student will have an understanding of chest and cardiac anatomy and physiology including esophageal motility. The student should be able to interpret chest radiographs and ECG's.

Objectives

1. Describe the causes, diagnosis, and treatment of spontaneous pneumothorax.
 - Discuss the risks of pneumothorax which could prove life-threatening.
 - Discuss the underlying pulmonary pathology you might expect to find.
 - Discuss the role of: observation, tube thoracostomy, chemical sclerosis, and surgical management of this condition.
 - Discuss the likelihood of recurrence and occurrence on the opposite side.
2. Describe the common etiologies for hemothorax.
 - Discuss an appropriate diagnostic evaluation for a patient with hemothorax.
 - Discuss the appropriate management of blood in the pleural cavity.
 - Which patients need an operation?
 - What are the risks in leaving the blood in the chest?
 - Discuss the most common non-traumatic causes of hemothorax.
3. Describe the presentations, etiologies and management of pulmonary embolus.
 - Discuss the predisposing factors which may lead to PE.
 - Discuss the electrocardiographic changes which might be seen and how they might be distinguished from those of myocardial infarct.
 - Discuss the main points in the diagnostic evaluation for PE.
 - Discuss management options:
 - Who needs anticoagulation with heparin?
 - Who needs lytic therapy?
 - Who needs vena caval filter protection?
 - Discuss the indication for open thoracotomy and pulmonary embolectomy to treat massive embolism.
4. Describe the presentation, etiology and management of acute thoracic aortic dissection.

- Discuss initial medical vs. surgical management
 - Discuss the goals of medical management and the role of beta-blockers and blood pressure control.
 - Discuss the usual sites of dissection within the proximal aorta and how the location affects prognosis and management.
 - Discuss issues as they relate to: aortic valve competence, distal re-entry site of the dissection, presence of hemothorax.
 - Discuss the primary risks associated with surgical repair of the dissected aorta (hemorrhage, paraplegia, stroke, MI, visceral ischemia in abdomen).
5. Describe the usual presenting symptoms and etiology of esophageal rupture.
- Discuss the most common causes of rupture.
 - Discuss the sites within the esophagus most frequently perforated.
 - Discuss the risks of untreated perforation.
 - Discuss the indications for surgical management of esophageal perforation.
 - Which patients may be safely managed non-operatively?
 - Discuss the treatment priorities in treating most esophageal perforations.
 - Discuss the relationship of underlying esophageal disease to treatment options in the management of perforation.
6. Describe the common presenting symptoms associated with gastro-esophageal reflux.
- Discuss the relationship of reflux to chronic asthma and aspiration.
 - Discuss the appropriate diagnostic work-up of a patient with suspect reflux. What is the role of barium swallow, endoscopy, manometry, 24 hour pH testing?
 - Discuss the evaluation of dysphagia.
 - Discuss the treatment of esophageal stricture. What are the risks of dilation?
 - Discuss Barrett's esophagus and its implications.
 - What are the risks of malignancy?
 - Who needs surgical management and which procedure (antireflux or resection) is needed?
 - Discuss surgical options for reflux (consider abdominal or thoracic, laparoscopic vs. open. partial vs. complete wrap)
 - Discuss the pathophysiology and treatment of achalasia and diffuse esophageal spasm.
7. Describe the clinical findings, symptoms, and etiology of empyema.
- Discuss the clinical situations likely to be associated with formation of an empyema.

- Discuss the usual organisms isolated in culture.
- Discuss the management options for treating empyema and the differences in management of empyema in children.
- Discuss the surgical options in the management of empyema.

Problems

1. A 52-year-old man presents with upper chest and back pain and dyspnea of 3 hours' duration.
 - What are the important points in the medical history (risk factors, family and previous history)?
 - What are the important parts of the physical exam that may help secure a diagnosis?
 - How will you differentiate cardiac ischemia from aortic root dissection?
 - Why might cardiac ultrasound be important?
 - What is the initial management of his thoracic dissection: if he's stable? If he has an 800 cc. hemothorax on the left? If he's in cardiogenic shock due to aortic insufficiency?
2. A 26-year-old man presents to the ER with a 2 day history of productive cough and about 3 hours of right sided chest pain and shortness of breath.
 - What is the differential diagnosis?
 - What are the important issues in his past and family history?
 - What is the diagnostic evaluation for this condition?
 - What is the treatment of CXR shows 30% collapse of the right lung with a small amount of fluid in the right costophrenic angle?
 - What do you do if after 4 days of chest tube suction he still has an air leak from the lung?
 - What is the likely surgical treatment for failed conservative management?
3. A 47-year-old woman has chest pain after eating dinner at home 4 hours following upper GI endoscopy for dilatation of her achalasia.
 - What is the presumed diagnosis?
 - What is the best means of making the diagnosis?
 - What is the appropriate management? Under what circumstances might you manage this non-operatively?
 - What might be an appropriate management for a small perforation at the GE junction with minimal soiling?

Skills

1. Interpretation of EKG and CXR.
2. Management of acute and chronic anticoagulation with heparin and coumadin.
3. Needle decompression of tension pneumothorax.

4. Recognition of altered breathing patterns.
5. Establishment and maintenance of an airway.
6. Perform and interpret thoracentesis.

Prevention

Which patients are at significant risk for DVT and need prophylaxis?

Ear & Nose Problems

Assumptions

The student understands the anatomy, function and physiology of the organs and tissues of the head and neck.

Objectives

1. Discuss the differential diagnosis of ear pain (otalgia).
 - consider infection, trauma, neoplasm, inflammation, vascular
 - contrast etiologies in children *versus* adults
2. Discuss the diagnosis, treatment and complications of acute and chronic otitis media.
 - include indications for myringotomy tube placement
3. Outline the evaluation of a patient presenting with hearing loss;
 - differentiate between conductive and sensorineural hearing loss
 - identify treatable causes.
4. Outline the evaluation of a patient presenting with tinnitus.
 - describe the potential etiologies and management
5. Describe the risk factors, diagnosis and management of epistaxis.
 - describe the indications and techniques for nasal packing.

6. Discuss the causes and mechanisms of chronic rhinitis/rhinorrhea.
 - outline the evaluation and management of chronic rhinitis.
7. Describe the indications for tonsillectomy.
8. Outline the evaluation of a patient with a salivary gland mass.
 - describe the potential etiologies
 - describe the common tumors of the salivary gland and their management.
9. Discuss the potential etiologies of oral cavity pain.
 - include inflammation, infection, neoplasm

Problems

1. A 55-year-old woman presents a swelling in the parotid area.
 - What additional data should be obtained from the patient's history?
 - What findings should be looked for on physical exam?
 - What is the initial testing and management plan?
2. A 77-year-old woman presents with ongoing nasal bleeding.
 - What additional data should be obtained from the patient's history and physical exam?
 - What is the initial management?

Skills

1. H&P to include ear, nose and oropharynx exam.
2. Demonstrate the use of a nasal speculum.
3. Describe the technique involved in the removal of a foreign body from the ear canal.

Prevention Issues

1. Chewing tobacco as risk for oral cavity neoplasm.
2. Occupational risks for hearing loss.

Fluid, Electrolyte & Acid Base Disorders

Assumptions

The student understands: the distribution of fluids and electrolytes in the body compartments; the role of the kidneys in regulating fluid and electrolyte balance; the basic physiology and biochemistry of the process of respiration.

Fluids and Electrolytes

Objectives

1. List the normal range of Na^+ , K^+ , HCO_3^- , Cl^- in serum and indicate how these ranges change in perspiration, gastric juice, bile and ileostomy contents.
2. List at least four endogenous factors that affect renal control of sodium and water excretion.
3. List least six symptoms or physical findings of dehydration.
4. List and describe the objective ways of measuring fluid balance.
5. List the electrolyte composition of the following solutions:
 - normal (0.9%) saline
 - 1/2 normal saline
 - 1/3 normal saline
 - 5% dextrose in water
 - Ringer's lactate
6. In the following situations, indicate whether serum Na, K, HCO_3^- , Cl and blood pH will remain stable (0), rise considerably (++), rise moderately (+), fall moderately (-), or fall considerably (--):
 - excessive gastric losses
 - high volume pancreatic fistula
 - small intestine fistula
 - biliary fistula
 - diarrhea
7. In the following situations, indicate whether serum and urine Na, K, HCO_3^- , Cl and osmolality will remain stable (0), rise considerably (++), rise moderately (+), fall moderately (-), or fall considerably (--):
 - acute tubular necrosis
 - dehydration
 - inappropriate ADH secretion (SIADH)
 - diabetes insipidus
 - congestive heart failure
8. Describe the possible causes, appropriate laboratory studies needed, and treatment of the following conditions:

- hypernatremia
 - hyponatremia
 - hyperkalemia
 - hypokalemia
 - hyperchloremia
 - hypochloremia
9. Describe the concept of a “third space” and list those conditions that can cause fluid sequestration of this type.

Acid Base Balance

Objectives

1. List the physiological limits of normal blood gases.
2. List the factors that effect oxygen delivery and consumption.
3. Indicate the mechanisms, methods of compensation, differential diagnosis, and treatment of the following acid base disorders:
 - acute metabolic acidosis
 - acute respiratory acidosis
 - acute metabolic alkalosis
 - acute respiratory alkalosis

Problem

A 60-year-old 70 kg. male has a long standing history of peptic ulcer disease. Two weeks ago he began to vomit several times a day. The vomitus often contained undigested food and was free of bile. The pain abdominal x-ray demonstrated a very distended stomach.

- What would be high on your list in the differential diagnosis?
- What type of acid base disorder would you expect to find in a patient with gastric outlet obstruction?
- What electrolyte abnormalities would you expect to see in this patient?
- Describe features of the physical examination that would fit in with the acid base and electrolyte abnormalities.
- Write orders for this patient to correct the abnormalities.

Skills

1. Focused physical examination looking at signs of dehydration, overload, electrolyte abnormality, acid base abnormality.
2. Write postoperative fluid and electrolyte orders after an appendectomy for perforated appendicitis in a 5-year-old, a 30-year-old, and in an 85-year-old, and explain rationale.
3. Demonstrate the ability to:

- draw venous blood from an antecubital vein
- arterial blood gas interpretation

Gastrointestinal Hemorrhage

Assumptions

Students understands the anatomy (including blood supply) and physiology of the gastrointestinal tract, to include the esophagus, stomach, small bowel, colon, and ano-rectum.

Objectives

1. Outline the initial management of a patient with an acute GI hemorrhage.
 - Discuss indications for transfusion, fluid replacement, and choice of fluids.
2. Differentiate upper vs. lower GI hemorrhage
 - Discuss history and physical exam abnormalities.
 - Discuss diagnostic studies.
3. Discuss the differences in evaluation and management of the patient presenting with:
 - hematemesis
 - melena
 - hematochezia
 - guaiac positive stool
4. Discuss medical vs. surgical management for:
 - peptic ulcer
 - variceal hemorrhage
 - Mallory-Weiss tear
 - gastric ulcer (benign vs. malignant)
 - Meckel's diverticulum

- intussusception
- diverticulosis
- ulcerative colitis
- colon cancer
- rectal cancer
- hemorrhoids
- AV malformation

Problems

For each of the following problems, answer the following questions:

- What further data should be obtained from the patient's history?
 - What physical exam findings would you look for?
 - What work-up would you recommend (include laboratory tests and diagnostic interventions)?
 - What is your differential diagnosis?
 - What therapy or treatment would you recommend?
1. A 25-year-old, otherwise health medical student presents with acute abdominal pain, nausea without vomiting, and bright red blood per rectum.
 2. A 65-year-old man presents with hypotension and bright red blood and clots per rectum. Two months ago he had a similar episode of massive bleeding for which he did not seek medical advice.
 3. A 62-year-old woman is referred with chronic anemia.

Skills

1. Focused H & P to include abdominal, pelvic and rectal exams
2. Placement of NG tube
3. Venipuncture

Prevention

Discuss the role of diet, medication, alcohol, caffeine, and *H. pylori* treatment in natural history and prevention of GI hemorrhage.

Jaundice

Assumptions

Student understands the mechanisms for production, excretion, and metabolism of bile and can recall the anatomy of the hepatobiliary system.

Objectives

1. Describe the differential diagnosis of a patient with jaundice.
 - Discuss, prehepatic, intrahepatic (both non-obstructive) and posthepatic (obstructive) etiologies.
 - Discuss painful vs. non-painful
 - Discuss benign vs. malignant
 - Discuss inflammatory vs. non-inflammatory
2. List & explain justification for the diagnostic modalities used in the evaluation of a patient with jaundice, to include limitations, relative costs and potential risks.
 - Discuss importance of the patient's history: estimated duration of illness, associated symptoms (pain and its characteristics), and risk factors.
 - Discuss important physical exam findings:
 - hepatomegaly
 - palpable mass
 - Courvoisier's sign
 - Murphy's sign
 - scleral icterus
 - abdominal tenderness
 - lymphadenopathy
 - Charcot's triad
 - Reynold's pentad
3. Explain the rationale for using these diagnostic tests in the evaluation of a patient with jaundice. What is the significance of abnormalities?
 - liver function tests
 - other laboratory tests and their indications (including hepatitis profile, peripheral blood smear, Coombs tests, etc.)
 - hepatobiliary imaging procedures (ultrasound, CT scan, ERCP, PTHC, HIDA scan).
4. Discuss the management principles (to include initial treatment; role and timing of surgery; and, if necessary, timing of appropriate consultation) of:

- cholecystitis
- choledocholithiasis
- cholangitis
- cholangiocarcinoma
- hepatic abscess
- pancreatic CA
- periampullary CA
- hepatic CA
- autoimmune hemolysis
- hepatitis
- hematuria
- periampullary duodenal diverticulum

Problems

A 52 year-old woman with a previous history of hepatitis B is diagnosed with symptomatic gallstones but refuses elective cholecystectomy. Four years later she presents with jaundice.

- What further data should be obtained from the patient's history?
- What findings should be looked for on physical examination?
- What lab tests should be ordered?
- What diagnostic tests should be ordered?
- What diagnosis is at the top of your differential list?

Skills

1. Focused H & P to include abdominal and rectal exam, palpating liver and spleen, Courvoisier's sign, Murphy's sign
2. Confirm physical findings of jaundice

Prevention

1. Discuss alcohol abuse
2. Discuss importance of hepatitis vaccination
3. Discuss importance of appropriate transfusion practices

Leg Pain

Assumptions

Students understand the anatomy of the lower extremities and the physiology of the clotting cascade.

Objectives

1. Describe atherosclerosis, its etiology, prevention and sites of predilection.
 - Discuss the intimal injury that characterizes the process and how that injury impacts therapy and prevention.
2. Describe the differential diagnosis of hip, thigh, buttock, and leg pain associated with exercise.
 - Discuss neurological vs. vascular etiologies of walking induced leg pain.
 - Discuss musculoskeletal etiologies.
 - Discuss the relationship of impotence to the diagnosis.
3. Describe the pathophysiology of intermittent claudication.
 - Discuss the diagnostic work-up of chronic arterial occlusive disease.
 - Discuss the role of segmental Doppler studies and arteriography
 - Discuss the medical management of arterial occlusive disease.
 - Discuss risk factors associated with arterial occlusive disease.
 - Discuss operative and nonoperative interventions for aortoiliac, femoropopliteal and distal vascular occlusion.
4. Describe the pathophysiology of ischemic rest pain.
 - Discuss evaluation and management of rest pain.
 - Discuss the role of anticoagulation in peripheral vascular disease.
 - Discuss the indications for amputation and choice of amputation level.
5. Describe the etiologies and presentation of acute arterial occlusion.

- Discuss embolic vs. thrombotic occlusion.
 - Discuss the signs and symptoms of acute arterial occlusion (the “P’s”)
 - Discuss the medical and surgical management.
 - Discuss the complications associated with prolonged ischemia and revascularization.
 - Discuss the diagnosis and treatment of compartment syndrome.
6. Describe the differential diagnosis, location, appearance and symptoms of leg ulcers due to:
- arterial disease and venous stasis disease
 - neuropathy
 - infection and malignancy
7. Describe the differential diagnosis of the swollen leg.
- Discuss how to differentiate lymphedema from venous stasis.
 - Discuss painful vs. non-painful swelling.
8. Discuss the presentation of and risk groups for bony tumors.
9. Describe the factors that lead to venous thrombosis and embolism.
- Discuss the usual locations for thrombosis.
 - Discuss differing implications of deep and superficial venous thrombophlebitis.
 - Discuss the common invasive and noninvasive diagnostic tests for DVT.
 - Discuss methods for DVT prophylaxis and identify high-risk patients.
 - Discuss the risks, benefits and available options for anticoagulation and thrombolysis.
 - Discuss the signs, symptoms, diagnostic evaluation and treatment of pulmonary embolism.
10. Describe the diagnosis, work-up and management options for symptomatic varicose veins and venous ulcers.
- Discuss the physical exam and tests for venous valvular competence.
 - Discuss the role of venography, ultrasound and plethysmography.
 - Discuss medical vs. surgical management.
 - Discuss the role of stripping, sclerosis, laser ablation.

Problems

1. A 57-year-old businessman presents with symptoms of crampy calf pain when walking 500 feet.
- What pertinent medical history must be evaluated?
 - What are the key elements to the physical exam?
 - What laboratory studies and diagnostic tests are indicated?

- How will you decide if this patient needs medical or surgical management?
2. An 82-year-old woman with chronic atrial fibrillation is sent in from a nursing home after the sudden onset of a painful, dusky, cool left leg and foot. She is unable to feel you touch her toes.
 - What is your differential and likely diagnosis?
 - What are your treatment and evaluation priorities?
 - How do you manage this patient surgically?
 - Is any long term treatment necessary to prevent recurrence?

Skills

1. Perform a complete physical examination of the vascular system, including pulse identification, auscultation, Doppler evaluation and ankle-brachial index determination.
2. Identify the physical signs of chronic and acute ischemia including: pallor, dependent rubor, delayed capillary refill, hair loss, thin and shiny skin, nail deformity, pallor on elevation, ulceration and gangrene.
3. Perform a competent neurological examination of the lower extremities including sensory, motor and autonomic distribution.

Prevention

1. Understand the relationship of smoking cessation, hypertension control, and lipid control in the prevention of atherosclerotic diseases.
2. Understand the principles and appropriate use of DVT prophylaxis.
3. Understand which patients may benefit from antiplatelet therapy for full anticoagulation to prevent arterial thrombosis.

Lung Nodule

Assumptions

Student has reviewed lung anatomy and normal physiology. Student is familiar with TNM classification of lung neoplasms.

Objectives

1. Create an algorithm for the evaluation of a patient with a lung nodule on chest x-ray.
2. Discuss the common risk factors and clinical symptoms of lung cancer.
3. Describe the role of surgery in lung cancer
 - a) Describe pulmonary function tests and values that are predictive of severe risk of pulmonary complications following thoracic surgery.
 - b) Identify conditions that preclude curative surgical resection for lung cancer.
4. List the most common sources of malignant metastases to the lungs.
5. Compare and contrast the management and prognosis of metastatic vs. primary lung malignancies.
6. Describe the most common diagnostic procedures used to evaluate pulmonary and mediastinal lesions.
7. List the common tumors of the anterior, posterior and superior mediastinum.
8. List the common chest wall tumors.

Problems

On a routine chest x-ray of a 65-year-old 30 pack per year smoker, a discrete 2 cm. nodule is found in the right upper lobe.

- List diagnostic possibilities including neoplastic and non-neoplastic lesions.
- Write orders for the diagnostic tests in order of priority.
- Write orders for the tests needed to determine if the patient is a suitable operative candidate.
- Describe the operative and ancillary treatments assuming the nodule was a non small-cell and undifferentiated neoplasm.
- Outline alternative treatment plans under the following conditions:
 - patient had previously known soft tissue sarcoma of the extremity
 - multiple lymph nodes found on CT scan of mediastinum
 - patient found to have poor pulmonary function
 - patient has hoarseness
- Outline a follow-up care plan if the patient had a lobectomy for non small-cell lung carcinoma.
- Compare and contrast the treatment plans and prognosis if the lesion were tuberculosis or sarcoidosis.

Skills

1. Read a chest x-ray.
2. Interpret pulmonary function tests.
3. Doctor/patient communication skills: giving bad news, communication with patient on ventilator.

Prevention

1. Discuss smoking cessation.
2. Role of screening & disease transmission for tuberculosis.

Neck Mass

Assumptions

The student has an understanding of head & neck anatomy, embryology, and thyroid / parathyroid physiology and can perform a competent head and neck physical exam.

Objectives

1. Describe the neck masses commonly presenting in childhood.
 - Discuss the embryologic origin of these lesions and the anatomic implications to consider when resecting them.
2. Describe the signs, symptoms & etiologies of inflammatory neck masses.
 - Discuss Ludwig's angina and why it may be life-threatening.
 - What is appropriate treatment for cervical adenitis?
 - Discuss the evaluation of suspected tuberculous adenitis.
3. Describe the most common neoplastic neck masses and their origin.
 - Discuss the role of fine-needle cytology, open biopsy, CT scan, MRI, thyroid scan, and nasopharyngeal endoscopy in the diagnostic work up of a neck mass.
 - Discuss the relationship of smoking and alcohol abuse to squamous cell cancers.
 - Discuss the evaluation and differential diagnosis of a patient with a thyroid nodule.
 - Discuss the common thyroid malignancies, their cell of origin and their management. Which has the best prognosis? The worst? Which is associated with MEN syndrome?
 - Discuss the relationship of radiation exposure to thyroid malignancy.
 - Which malignancies frequently metastasize to the neck? How is the metastatic nodal disease managed and how does this differ based on the origin of the primary?
4. Discuss the common non-neoplastic thyroid diseases that could present as a mass.

- Discuss the symptoms associated with hyperthyroidism and discuss treatment options.
- Discuss diagnosis and management of thyroiditis.

Problems

1. A 27-year-old presents with a discrete 1.5 cm. thyroid nodule.
 - Discuss the relevant points in the medical history.
 - Describe the specific features of the mass to be evaluated on physical exam.
 - What is the appropriate diagnostic evaluation of an asymptomatic nodule?
 - Discuss how fine needle aspiration cytology is performed.
 - Describe the possible results of FNA and how they would be managed.
 - Discuss the potential complications of thyroidectomy.
2. A 5-year-old presents with a tender 2 cm. swelling over his mid-anterior neck.
 - What is your differential diagnosis?
 - What is the embryologic origin of the thyroglossal duct?
 - What are the key elements of the surgical strategy for its removal?
 - How does the presentation differ from that of branchial cleft cyst?
3. A 68-year-old smoker presents with hoarseness, cough and a new 2 cm. nontender neck mass in his left neck.
 - Describe the important elements of the history for this patient.
 - What are the key elements of your physical exam?
 - Why might he be hoarse and how might that impact treatment and prognosis?
 - What is the surgical management of laryngeal squamous cell cancer?
 - How would the finding of a 2 cm. mass on chest x-ray change your evaluation?
 - What is the association between squamous cell cancers of the head and neck and lung cancer?

Skills

1. Perform a complete head and neck physical exam including indirect laryngoscopy and intra-oral exam.
2. Interpret routine thyroid function tests.

Prevention

1. Understand the relationship of smoking and chewing tobacco use to head and neck malignancy.
2. Understand the relationship of thyroid malignancy to radiation exposure.

Non-Healing Wounds

Assumptions

Students will review and understand the fundamental principles of wound healing and the physiologic sequelae of diabetes and malnutrition.

Objectives

1. Define “non-healing”.
2. Discuss a differential diagnosis, evaluation, and treatment of a patient with:
 - non-healing lower extremity wound
 - non-healing wound of the torso, or body area other than the lower extremity
3. Describe the pathophysiology involved for each of the diagnostic possibilities.
 - Consider: pressure, ischemia, infection, malignancy, and foreign body

Problems

1. You are asked to evaluate a 75-year-old man with diabetes who has a 2 cm ulcer just on the sole of his foot at the level of the metatarsal heads. He has 4+/4+ femoral pulses bilaterally as well as strong popliteal pulses, but no pulses below this. He has decreased sensation over his feet to the ankle bilaterally.
2. You are asked to consult on a 60-year-old paraplegic with a persistent draining ulcer over the left ischial tuberosity. He has been paraplegic for 30 years following a car accident. The ulcer has been present for 3 months and does not seem to be getting smaller.
3. A 70-year-old woman comes to your office for help with an ulcer on her right leg. It has been there ever since she bumped her leg a month ago. It is slowly enlarging but not particularly painful. The ulcer is punched out and located just below her right medial malleolus. The base is granulating and the edges are sharply demarcated and a little tender. Her lower leg shows brawny induration around the ulcer with discoloration of the skin of the lower leg over the distal third. She tells you that she had a swollen leg after one of her deliveries and she had to be on some kind of medication for her blood for months afterwards. Since then her leg swells when she is on it for a long time and it aches. She gets sores like this fairly easily with minimal trauma and it takes longer and longer for them to go away. She also notes that she has been told she has “low blood” but doesn’t know any more than that.

For each of these cases:

- What further data should be obtained from the patient’s H & P?
- What diagnostic tests should be performed?
- What treatment would you recommend?

Prevention

1. Discuss the prevention of non-healing wounds. What the patients can do? What the physicians can do?
2. Discuss the issues of prevention especially related to the diabetic and the patient with venous insufficiency would be appropriate.
3. Recognition of patients at risk for pressure sores.

Perianal Problems**Assumptions**

The student knows the basic anatomy of the anal canal and rectum and is familiar with the basics of the mechanism of defecation.

Objectives

1. Develop a differential diagnosis for a patient with perianal pain. (Be sure to include benign, malignant and inflammatory causes.)
2. Discuss the characteristic history findings for each of the above including:
 - character and duration of complaint
 - presence or absence of associated bleeding
 - relationship of complaint to defecation
3. Describe physical exam findings for each diagnosis. Indicate in which part of exam (external, digital, anoscopic or proctoscopic) these findings are identified.
4. Discuss treatment plan for each diagnosis listed in objective one, including non-operative interventions and role and timing of surgical interventions.

Problem

A 25-year-old man presents with the sudden onset of perianal pain.

- list specific questions to be included in the history
- discuss how your differential might change if the patient has AIDS
- discuss how your differential might change if the patient is 62 with a history of a 10 lb. weight loss

Skills

1. Focused H&P for perianal complaints
2. Thorough and accurate anorectal exam to include external, digital, and anoscopic exams.

Prevention

Discuss dietary habits which may help prevent anorectal problems.

Perioperative Care

Assumptions

The student can perform a complete history and physical examination. The student will review pharmacology of common anesthetic medications, antibiotics, and pain control agents. The student can integrate the physiology of cardiovascular, pulmonary, gastrointestinal, renal, hepatic, endocrine and nervous system function. The student is familiar with carbohydrate, protein and fat metabolism and the role of vitamins / minerals in health and disease

Objectives

Preoperative Assessment

1. Describe features of a patient's clinical history that influence surgical decision making. Consider: known diseases, risk factors, urgency of operation, medications etc.
2. Discuss tools that may assist in preoperative risk assessment. Consider laboratory studies, imaging studies etc. Include the following:
 - Pulmonary (example: exercise tolerance, pulmonary function testing)
 - Cardiovascular (ASA classification, Goldman criteria, echocardiography, thallium studies, Doppler)
 - Renal (Bun/Cr, dialysis history)

- Metabolic (nutritional assessment, thyroid function)
3. Compare and contrast anesthetic risk factors. Consider the following variables:
 - Age: neonates to geriatrics
 - Urgency of intervention:
 - emergent versus elective surgery
 - associated conditions: pregnancy, diabetes, COPD, valvular or ischemic heart disease, cerebral/peripheral vascular disease, renal insufficiency etc.
 4. Discuss history, physical and laboratory findings utilized in nutritional assessment. Be familiar with the most common forms of nutritional & deficiency disorders. Consider: protein-calorie malnutrition, chronic alcoholism, iron & B12 deficiencies, malabsorption syndromes and requirements of the morbidly obese.
 - Discuss disease states and surgical interventions at high risk for nutritional impairment.
 - Discuss the advantages and disadvantages of nutritional support.
 - compare and contrast enteral vs. parenteral administration
 - complications
 - methods of determining requirements and assessing response

Perioperative Assessment

1. Discuss the components of informed consent as it applies to surgical interventions (procedures, transfusions etc.)
 - Demonstrate documentation of consent in the medical record.
 - Discuss the rationale for documentation in the medical record.
 - Describe the components and demonstrate the ability to formulate an operative or procedure note, postoperative orders, a postoperative note.
2. Describe the indications and efficacy of various monitoring techniques.
 - Compare & contrast invasive vs. noninvasive.
 - Consider the following: vital signs, I&O, arterial lines, pulse oxymetry, ABG, ECG, Swan Ganz, CVP, ICP etc.
3. Discuss conditions that potentially interfere with fluid and electrolyte homeostasis in the peri-operative period, and describe strategies for replacement / monitoring.
 - Example: effects of bowel preparation, NPO status, NG drainage, dialysis, operative losses, etc.
4. Describe factors that might impair coagulation or increase risk of bleeding.
 - Describe the various blood component therapies available.
 - Discuss the indications, risks and benefits of transfusion therapy.
 - Consider: packed cells vs. whole blood , FFP, platelets, cryoprecipitate, albumin.

- Discuss alternatives to allogeneic blood transfusion and their appropriate use. Include: autologous donation, hemodilution, , iron / erythropoetin therapy, and modification of transfusion trigger.
5. Discuss risk factors for alcohol withdrawal syndromes. Consider prevention strategies.

Postoperative Assessment

1. List the conditions necessary for discharge of a patient to home or to the floor following a general or spinal anesthetic
2. Understand the pharmacological action, benefits, risks, and side effects of various pain control agents.
 - Compare and contrast : parenteral vs. enteral agents and describe the role of epidural and nerve blocks in pain management
3. Describe the expected outcome of an uncomplicated surgical procedure. Discuss a normal post-operative course for various common operations. Consider:
 - Time to recovery, order of recovery of digestive function (stomach, small bowel, colon) etc.
 - Characteristics of a healing surgical wound.
 - Impact of various incisions on recovery.
 - Functional abilities and disabilities acutely and chronically.
 - Nutritional and fluid needs and options for replacement.
 - Potential complications : prevention strategies.
 - Patient support systems and options for post hospital care.
4. Describe criteria for admission of a patient to an ICU or special care unit following surgery.
 - Compare and contrast post-operative courses of patients undergoing Whipple procedure, coronary artery bypass, multiple trauma with craniotomy, laparotomy and orthopedic injuries.
 - List criteria for weaning a patient from the ventilator post-operatively.

Problems

1. A 65-year-old man is undergoing a left total knee replacement. He has a history of adult onset diabetes, a previous myocardial infarction and smokes 1 pack of cigarettes daily.
 - What type of preoperative assessment is indicated?
 - What postoperative problems must you anticipate?
 - What postoperative orders would you write?
2. A 24-year-old male with chronic renal failure undergoes placement of a prosthetic dialysis shunt in his right arm. Blood loss is 50 cc. His hemoglobin values are 7.0 gm/dl pre-op and 5.8 gm/dl post-op.
 - When should he be dialyzed perioperatively? Why?
 - Is a blood transfusion indicated? Discuss pros and cons of transfusion. Are there alternatives to transfusion?

3. A 7-week-old infant is admitted with vomiting, weights loss and dehydration. He will require surgery for diagnosed pyloric stenosis.
 - What issues must be addressed preoperatively?
 - What concerns are there for infants undergoing anesthesia that differ from adults?
 - Compose postoperative orders.

Skills

1. Students should be able to obtain a focused history and physical exam that addresses pre-operative risk and post-operative care.
2. Students should have exposure to a variety of bedside procedures and be able to relate the indications, contraindications and complications of various techniques.
 - Demonstrate sterile technique.
 - Assess a post-op wound and change a surgical dressing.
 - Perform simple suturing; remove sutures and staples.
 - Place a peripheral IV and obtain a venous blood sample.
 - Place a NG drain.
 - Place a Foley catheter in males/females.
 - Remove a drain.
 - Assume a medical student role in the operating room.
3. Demonstrate the ability to perform basic record keeping on a surgical service. Consider common surgical procedures: laparoscopic cholecystectomy, colon resection, AAA resection and include:
 - pre and post-operative orders
 - operative note
 - daily progress note
 - discharge instructions
4. Outline a specific perioperative care plan for various patients who are to undergo surgery (i.e., advanced pulmonary disease, diabetes mellitus, known cardiovascular disease, etc.). Include the following in your discussion:
 - preoperative evaluation and preparation
 - anesthetic considerations
 - perioperative prophylaxis
 - post-operative care and monitoring
5. Calculate the nutritional needs and describe preferred routes of administration of nutritional therapy for patients with various surgical problems.

- Compose nutritional orders and routine laboratory studies utilized to follow response.
 - Consider patients with:
 - inflammatory bowel disease
 - 50% TBSA burn
 - intestinal fistula
 - major esophageal resection for tumor
6. Formulate a patient care plan addressing disposition that integrates social services, nursing, etc. Consider a patient with:
- total hip replacement
 - perioperative stroke
 - inoperable pancreatic cancer

Prevention

1. Describe what is meant by the term prophylaxis and discuss its rationale in preventing infectious and pulmonary complications.
2. Discuss alternatives, including their appropriate uses and risks, for prophylaxis of DVT and PE.
3. Discuss the indications for antibiotic prophylaxis; include commonly utilized agents, timing and duration of prophylaxis. Consider alternatives in patients with known drug allergies.
4. Discuss the rationale for bowel preps in patient undergoing various abdominal surgeries.
5. Describe modifications in diet, chronic medications, behavior (smoking, alcohol) that might be indicated in patients undergoing major surgery.

Post-operative Complications

Assumptions

The student understands that prevention is the best form of management for postoperative complications; is knowledgeable about the normal physiology of the cardio-respiratory, gastrointestinal, renal, immunological, neurological, and circulatory systems; and understands the alterations in physiology which are produced by surgical stress.

Objectives

1. Describe the differential diagnosis of a patient having postoperative fever. For each entity, discuss the clinical manifestations, appropriate diagnostic work-up, and management:
 - Within 24 hours - response to surgical trauma; atelectasis; necrotizing wound infections.
 - Between 24 and 72 hours:
 - pulmonary disorders (atelectasis, pneumonia)
 - catheter related complications (IV-phlebitis, Foley-UTI)
 - After 72 hours:
 - infectious (UTI, pneumonia, wound infection, deep abscess, anastomotic leak, prosthetic infection, acalculous cholecystitis, parotitis)
 - noninfectious (deep vein thrombosis)
 - Intraoperative - malignant hyperthermia
2. Discuss the following wound complications in terms of predisposing risk factors (patient condition, type of operation, technique), as well as their recognition, treatment, and prevention:
 - hematoma and seroma
 - wound infection
 - dehiscence
 - incisional hernia
3. Discuss the various causes of respiratory distress and respiratory insufficiency that may occur in the postoperative patient. For each complication, describe the etiology, clinical presentation, management, and methods of prevention:
 - atelectasis
 - pneumonia
 - aspiration
 - pulmonary edema
 - ARDS
 - pulmonary embolism (including deep venous thrombosis)

- fat embolism
4. Discuss the diagnostic work-up and treatment of oliguria in the postoperative period. Include pre-renal, renal, and post-renal causes (including urinary retention).
 5. Discuss the possible causes of hypotension which may occur in the postoperative period. For each etiology describe its pathophysiology and treatment:
 - hypovolemia
 - sepsis
 - cardiogenic shock - including postoperative myocardial infarction, fluid overload, arrhythmias, pericardial tamponade
 - medication effects
 6. Describe the management of postoperative chest pain and arrhythmias.
 7. Describe factors which can lead to abnormal bleeding postoperatively, and discuss its prevention and management:
 - Surgical site - inherited and acquired factor deficiencies, DIC, transfusion reactions, operative technique
 - Gastroduodenal (i.e. stress ulcerations)
 8. Discuss disorders of alimentary tract function following laparotomy which may produce nausea, vomiting, and/or abdominal distension:
 - paralytic ileus
 - acute gastric dilatation
 - intestinal obstruction
 - fecal impaction
 9. Discuss precipitating factors and treatment of the following postoperative metabolic disorders:
 - hyperglycemia
 - adrenal insufficiency
 - thyroid storm
 10. Discuss external gastrointestinal fistulas:
 - contributing factors
 - management
 11. Describe the factors which can give rise to alterations in cognitive function postoperatively, as well as their evaluation and treatment:
 - hypoxia
 - perioperative stroke

- medication effects
- metabolic and electrolyte abnormalities
- functional delirium
- convulsions

Problems

A 74-year-old woman undergoes an emergency resection of her sigmoid colon with a descending colostomy for diverticulitis. The next morning she is febrile to 38.9° C, is breathing at 25 breaths per minute, and has passed 100 cc. of concentrated urine in the past 8 hours.

- What are the possible sources of her fever?
- What steps would you undertake to investigate the possible causes of this fever?
- What is the most likely cause of this patient's oliguria?
- How would you initially manage this patient's low urine output (be specific).

Skills

1. Focused physical examination to include mental status changes, lungs, heart, and abdomen.
2. Ability to assess surgical incision for wound complications.
3. Recognition of findings on CXR indicative of atelectasis, pneumonia, pulmonary edema, and ARDS.
4. Ability to insert NG tube, Foley catheter.

Prevention

Many postoperative complications may be avoided through prevention.

1. Wound complications - meticulous surgical techniques, perioperative antibiotics for clean-contaminated wounds, delayed closure of dirty wounds.
2. Respiratory complications - avoid smoking in advance of elective surgery, encourage coughing and deep breathing, sufficient but not excessive analgesia, early postoperative ambulation.
3. Oliguria - adequate intravenous fluids, assure outflow.
4. Hypotension - avoid hypovolemia, monitor for arrhythmias, early recognition and treatment of infection, titrate medication doses carefully.
5. Bleeding - *Surgical site*: meticulous operative technique, screen for factor deficiencies, give platelets and fresh frozen plasma for massive blood loss, avoid DIC by preventing infections and treating them early.
Gastroduodenal: keep gastric pH neutral.
6. Alimentary tract dysfunction - use nasogastric tube, stool softeners, and cathartics when necessary.
7. Hyperglycemia - avoid too large infusions of glucose, monitor diabetics carefully and administer insulin appropriately.
8. Adrenal insufficiency - provide stress doses of corticosteroids when adrenals are chronically suppressed.
9. Thyroid storm - control hyperthyroidism prior to surgery.
10. Alterations in cognitive function - avoid hypoxia and electrolyte imbalances, titrate medications carefully.

Scrotal Pain & Swelling

Assumptions

The student knows the anatomy of the scrotal contents. The student is familiar with the embryologic development and descent of the testicle.

Objectives

1. Generate a list of potential diagnoses for the patient who presents with pain or a mass in the scrotum.
 - Discuss testicular vs. extratesticular origins
 - Discuss benign vs. malignant causes
 - Discuss emergent vs. nonemergent causes
2. List history and physical exam findings that will help you differentiate etiologies. Be sure to discuss the following issues:
 - pain - presence, absence, onset, severity
 - palpation - distinguish testicular from extratesticular (adnexal) mass
 - effect of Valsalva maneuver

- transillumination
3. Discuss the diagnostic algorithm for scrotal swelling and/or pain.
 4. Discuss the staging and treatment of testicular cancer.
 5. Discuss treatment of non-malignant causes of scrotal swelling and/or pain.
 6. Discuss diagnosis and treatment of the undescended testicle (be sure to consider age of diagnosis).

Problem

1. A 35-year-old man presents with a new mass in his left hemiscrotum.
 - What findings on history and physical exam would help you to determine if this is a mass in the testicle?
 - What lab tests would you order if there is a mass in the testicle?
 - If you think the mass is malignant what diagnostic and therapeutic intervention would you recommend to the patient?
2. A 15-year-old boy presents with severe pain in his scrotum.
 - Discuss how the history and physical exam might help you to differentiate between torsion and epididymitis.

Skills

1. Focused H&P for testicular mass.
2. Technique for transillumination of scrotum.

Prevention

1. Discuss role of scrotal self-exam in early detection of testicular cancer.

2. Discuss methods for prevention/early detection of testicular cancer for patients with a previously undescended testicle.

Shock

Assumptions

Student understands the p

Physiologic principles that govern normal blood pressure and hemodynamic homeostasis.

Objectives

1. Define shock.
2. Differentiate the signs, symptoms, and hemodynamic features of shock:
 - hemorrhagic
 - cardiogenic
 - septic
 - neurogenic
 - anaphylactic
3. Discuss priorities and specific goals of resuscitation for each form of shock:
 - Define goals of resuscitation
 - Defend choice of fluids
 - Discuss indications for transfusion
 - Discuss management of acute coagulopathy
 - Discuss indications for invasive monitoring
 - Discuss use of inotropes, afterload reduction in management
4. Discuss priorities in resuscitation (ABC's)

Problems

1. A 68-year-old male is admitted to the Emergency Department after a motor vehicle crash in which he was a restrained driver. He was reported to have had a blood pressure of 90/60 mm Hg at the scene after a prolonged extrication. The windshield was reportedly broken and he has a large head laceration as well as an obvious right hip dislocation. He complains of chest and abdominal pain on physical examination.
 - What work-up would you recommend? Include diagnostic and laboratory testing.
 - How would you rule in/out:

- hemorrhagic shock
 - cardiogenic shock
 - cardiac tamponade
 - neurogenic shock
- Describe your management and endpoints of resuscitation
2. An 18-year-old female becomes hypotensive and unresponsive in the x-ray suite during a computer tomography (CT) scan. The scan is being performed to evaluate pelvic pain.
 - Describe your management strategy

Skills

1. Focused physical exam to include neck veins, cardiac, pulmonary and abdominal exams.
2. Placement of large-bore intravenous access.
3. Interpretation of EKG and chest x-ray.
4. Interpretation of hemodynamic measurements, to include Swan Ganz catheter measurements.

Prevention

Discuss the importance of shock prevention.

- Describe a patient who one might predict would develop hypovolemic shock; cardiogenic shock; neurogenic (distributive) shock; septic shock; anaphylactic shock.
- Discuss strategies that would prevent your patient from developing shock.

Skin & Soft Tissue Lesions

Assumptions

The student understands gross anatomy and histology of the soft tissue structures.

Objectives

1. Describe the commonly used local anesthetics.
 - Discuss the advantages and disadvantages of epinephrine in the local anesthetic.
 - Discuss special precautions needed on the digits.
 - Discuss safe dosage ranges of the common anesthetics and the potential toxicities of these drugs.

2. Describe the common benign skin lesions and their treatment (papillomas, skin tags, subcutaneous cysts, lipomas).
3. Describe the characteristics, typical location, etiology and incidence of basal cell and squamous skin cancers.
 - Discuss the relationship to solar irradiation, ethnicity, previous tissue injury, & immunosuppression.
 - Discuss the characteristics of malignant skin lesions which distinguish them from benign lesions.
 - Discuss the appropriate treatment of small and large basal and squamous cancers and their prognosis.
4. Describe the characteristics, typical locations, etiology and incidence of malignant melanoma.
 - Discuss the relationship of melanoma to benign nevi and characteristics which help differentiate them.
 - Discuss risk factors for melanoma. What are the lesions which have high potential for malignant transformation?
 - Discuss the various types of melanoma and prognosis for each type.
 - Discuss the relationship of size and thickness to prognosis.
 - Discuss the usual treatment for cutaneous melanoma including margins, depth and lymph node management including sentinel node mapping.
5. Describe the incidence, etiology, epidemiology and classification for soft tissue sarcomas.
 - Discuss the differences in frequency and cell type between childhood and adult sarcomas.
 - Discuss the features which differentiate benign from malignant soft tissue tumors.
 - Discuss staging and how the stage impacts prognosis for these tumors.
 - Discuss the potential role and extent of surgery in their treatment; chemotherapy? radiation? immunotherapy?
 - Discuss the relationship of Kaposi's sarcoma to HIV infection and the implications for the patient's management.

Problems

For each of these patients, explain the necessary history to be obtained, develop a differential diagnosis and indicate which is most likely, describe characteristic findings to be evaluated by physical exam, and discuss the appropriate diagnostic work-up.

1. An 8-year-old boy with a 6 cm. soft tissue mass in the anterior thigh.
2. A 32-year-old woman with a tender, dark, erythematous skin lesion on her upper back.
3. A 45-year-old deeply tanned blonde woman with an irregular raised pigmented lesion on her shoulder.
4. A 75-year-old bald man with an erythematous nodule with a keratotic crust on the scalp.

Skills

Techniques of:

- infiltration of local anesthetic and nerve blocks for cutaneous excision
- incision and drainage
- skin biopsy (punch and excisional)

Prevention

1. Stress the importance of sun screens and other skin protection, particularly in fair-skinned individuals.
2. Promote awareness of the importance of self-exam of skin lesions for suspicious changes.
3. Remove congenital hairy nevi prior to adulthood.

Swallowing Difficulty & Pain**Assumptions**

Students will review anatomy, physiology, and pathophysiology of the swallowing mechanism. It is assumed that the students will have this knowledge and apply it to the clinical situation.

Objectives

1. Define dysphagia and odynophagia.
2. Describe the differential diagnosis for a patient with dysphagia / odynophagia.
 - Motility Disorder
 - neurologic disorders
 - motor disorders
 - Extrinsic obstruction / compression
 - Intrinsic obstruction
 - neoplasm
 - inflammation
 - foreign body

- Inflammation/Infections
3. Compare and contrast the history, presentation, physical findings, and laboratory findings for these different conditions.
 4. Discuss the diagnostic modalities available, how they are used, and how they relate to the normal swallowing mechanism.
 5. Describe the options for management of these conditions.
 6. Discuss indications for operative vs. non-operative management when appropriate.
 7. For those problems where operative intervention is appropriate, discuss the procedures available and discuss their pros and cons.

Problems

1. An 80-year-old gentleman presents with a history of trouble swallowing. For about a year he has noted he has trouble swallowing when he eats, regurgitates undigested food, and his family complains that his breath smells bad. He has no pain and has been in good health otherwise given his age. On exam he is thin, without masses in his neck, chest is clear; his abdomen is soft and there are no masses.
 - What are the differential diagnoses?
 - What is the next step?
 - What test should be done, in what order, and why?
2. You are asked to evaluate a 61-year-old man who presents with difficulty swallowing. It has been coming on for about 4 months and progressively getting worse. He has a past history of a lot of indigestion and heartburn. He also notes that food would come up in the back of his throat sometimes when he would lie down and he would have a sour taste in his mouth and sometimes even cough. This got better about 8-12 months ago and then he started having trouble swallowing a few months later. He smokes 1 PPD of cigarettes and drinks a couple of beers with dinner. Exam is unremarkable except for barrel chest.
 - What is the differential diagnosis?
 - How would you evaluate this patient?
 - What are the treatment options for benign esophageal stricture?
 - What are the treatment options for carcinoma of the esophagus?
3. A 53-year-old patient presents with a history of difficulty swallowing for years. More recently she is having increasing trouble swallowing, and has been regurgitating undigested food. Exam is unrevealing, but on chest film there is an air fluid level seen behind the heart in the mid chest.
 - Describe a differential diagnosis and diagnostic evaluation.
 - Discuss the management options for a patient with achalasia.
 - Discuss the management of a patient with paraesophageal hernia.

Skills

1. Focused history and physical relevant to dysphagia.
2. Ability to interpret:
 - Contrast studies of the pharynx, esophagus, and stomach
 - Manometry of the esophagus
 - CT scans of the chest
 - pH studies

Prevention

1. Risk factors for esophageal carcinoma.
2. Screening and surveillance for patients who are at risk for carcinoma.

Transplantation**Assumptions**

The student has a basic understanding of the immune system and its role in the response to foreign antigens. The student should also have an understanding of the anatomy and physiology of the renal, pancreatic, hepatic, pulmonary and cardiac organ systems.

Objectives

1. Describe the common organs and tissues currently being transplanted:
 - Discuss issues of living related and unrelated vs. cadaveric donation.
 - Discuss acceptable and exclusionary criteria for donation by organ system.
 - Discuss the criteria for establishing brain death for the purposes of organ donation.
 - Discuss potential ethical issues as they relate to organ donation.
 - Define autograft, allograft, xenograft, orthotopic and heterotopic as they relate to transplantation.
2. Describe the common immunosuppressive agents used for transplantation.
 - Discuss the mechanism of action and major side effects of steroids, cyclosporine, mycophenylate, azathioprine, FK-506, antithymocyte globulin and OKT-3 (monoclonal antibodies).
 - Discuss the relation of ABO compatibility to organ transplantation.

- Discuss the signs, symptoms, and pathophysiology of rejection and define:
 - hyperacute rejection
 - accelerated acute rejection
 - acute rejection
 - chronic rejection
 - Discuss common infectious complications of immunosuppression and their prevention and management.
 - Discuss the relationship of immunosuppression to risk of malignancy and identify the common malignancies associated with immunosuppression.
3. Describe common organ preservation techniques and their limitations for currently transplanted organs and tissues.
- Discuss the optimal and maximum preservation time for renal, pancreas, liver and cardiac transplants.
4. Describe the most common conditions leading to transplantation, eligibility, the results (patient and graft survival), major complications of and long term outcome for:
- renal transplantation
 - pancreas transplantation
 - liver transplantation
 - cardiac transplantation
 - lung transplantation

Problems

1. A 25-year-old suffers a severe brain injury in a motor vehicle accident and is being evaluated as a potential organ donor.
- How will you determine brain death?
 - What tests will need to be performed to determine the patient's eligibility as a donor? What tests are needed for which organs being considered?
 - What are the potential organs and tissues for donation?
 - How and when should the patient's relatives be approached to discuss donation?
2. A 32-year-old woman would like to donate one of her kidneys to her 25-year-old brother with end-stage diabetic renal failure:
- What immunologic evaluation is necessary to determine compatibility?
 - What is the appropriate work up for the donor to determine acceptability?
 - What is the benefit of living related donation vs. cadaver transplantation?

- How do you insure the rights of the donor to willingly donate without pressure from family members?
- What are the risks and morbidity the donor needs to understand?

Skills

Think about how you would approach the topic of organ donation with the family of a severely brain injured patient, and if possible, be present when such a discussion is held.

Prevention

1. What are the major preventable causes of renal failure? Liver failure? Heart failure?
2. Understand the relationship of viral hepatitis B and C to cirrhosis and hepatic failure and measures that will decrease the risk of developing chronic infection from these organisms.

Trauma

Assumptions

The student understands the basic physiology of the circulatory system and changes that occur due to shock. The student will review the pertinent anatomy of the organ systems discussed in the trauma chapter.

Objectives

1. Describe the priorities and sequence of a trauma patient evaluation (ABC's).
2. Describe the four classes of hemorrhagic shock and how to recognize them.
3. Describe the appropriate fluid resuscitation of a trauma victim.
 - Discuss choice of IV access
 - Discuss the choice of fluid and use of blood components.
 - Discuss the differences between adult and pediatric resuscitation.
4. Discuss the types, etiology and prevention of coagulopathies typically found in patients with massive hemorrhage.
5. Describe the appropriate triage of a patient in a trauma system.

- Discuss how the trauma system is organized in your state.
 - Discuss the importance of mechanism of injury on management and triage decision making.
6. Describe the diagnostic evaluation, differences between blunt and penetrating mechanisms of injury and the initial management of:
 - Closed head injury (consider Glasgow Coma Scale, ICP, subdural hematoma, epidural hematoma, diffuse axonal injury, basilar skull fractures & CSF leaks)
 - Spine injury (consider mechanism of injury, level of injury, use of steroids, immobilization, neuro exam, management of shock)
 - Thoracic injury (consider hemo / pneumothorax, tension pneumothorax, tamponade, pulmonary contusion, massive air leak, widened mediastinum, flail chest)
 - Abdominal injury (consider role of physical exam, ultrasound, CT, peritoneal lavage, operative vs. non-operative management of liver and spleen injury, which patients need urgent laparotomy, management of hematomas)
 - Urinary injury (consider operative vs. non-operative renal injury, ureteral injury, intraperitoneal and extraperitoneal bladder injury, urethral trauma, when not to place a Foley, candidates for cystogram, relationship to pelvic fracture)
 - Orthopedic injury (consider open vs. closed fractures, compartment syndromes, concepts of immobilization (splinting, internal fixation), treatment of patients with pelvic fractures, hemorrhage control, commonly associated vascular injuries)
 7. Describe the early management of a major burn.
 - Discuss estimation of total body surface burn and burn depth.
 - Discuss fluid resuscitation, choice of fluid and monitoring for adequacy of resuscitation (rule of 9's, differences in pediatric and adult management).
 - Discuss options for topical antimicrobial therapy.
 - Discuss inhalation injury, CO poisoning and triage of patients to burn centers.
 - Discuss the basic principles of wound coverage, skin grafting, and timing.
 - Discuss the assessment and need for escharotomy.
 8. Describe the effects of trauma on the individuals' ability to return to full health and employment.
 9. Discuss the role of physical therapy, occupational therapy, speech therapy and other rehabilitation services in the patient's recovery.
 10. Discuss the economic impact of traumatic injury and disability.
 11. Describe the recognition of suspected child abuse and domestic violence presenting as trauma and the physician's role in reporting.
 12. Describe the importance of careful documentation in the medical record for traumatic injury and the basic concepts of a "trail of evidence" in victims of assault.

Problems

1. A 75-year-old man, unrestrained driver, is brought in after a single car accident. He is awake, groaning and responsive. BP 120, P 90, R 28. He complains of abdominal, chest and left shoulder pain, has no lacerations or obvious deformities and no evidence of head injury. He is immobilized on a backboard and is in a cervical collar.
 - What are the pertinent elements of his medical history?
 - What are your principal differential diagnoses based on his presentation?
 - Can he be in shock with a normal blood pressure?
 - How will you evaluate his chest pain?
 - How will you evaluate his abdominal pain?
 - What are your management priorities if he has obvious blood in the abdomen and acute ischemic changes on his EKG? How might you improve his cardiac risk?

2. A 65-year-old woman is brought in after being removed from a house fire 45 minutes ago. She is semi-conscious and groaning and complains of chest, abdomen and lower extremity pain. BP 120, P 90, R 24. Exam reveals 2nd and 3rd degree burns over all of her body except her back and buttocks.
 - What are your treatment priorities?
 - How do you assess for inhalation injury and if present, how do you treat it?
 - What will you use for fluid resuscitation, via what route and how much will you give over what time frame?
 - What is the rule of 9's?
 - What would you do if the patient has no palpable radial pulse and an ischemic looking hand?
 - How do you assess adequacy of resuscitation?
 - How will you manage the pain for this patient? the wounds?

Skills

1. Perform rapid, concise, thorough trauma history and physical focusing on the ABC's, AMPLE history, and primary/secondary surveys.
2. Emergency airway management..
3. Needle decompression of tension pneumothorax.
4. IV access

Prevention

1. Understand the importance of passenger and appropriate infant restraints in motor vehicles.
2. Understand the role of helmets in preventing head injury in motorcycle, bicycle, and roller blade accidents.
3. Understand the significant influence of the use of drugs and alcohol on a large percentage of traumatic injuries including assaults, burns and motor vehicle accidents.
4. Understand the value of smoke and carbon monoxide detectors, and evacuation drills in reducing mortality and injury.

Urinary Complaints

Assumptions

The student understands the anatomy and embryology of the urinary tract system.

Objectives

1. Describe the potential etiologies of hematuria.
 - Consider age, presence of pain, character of bleeding trauma, etc.
 - Consider occult vs. gross hematuria
2. Discuss the diagnostic modalities available for evaluation of hematuria including cost, risks indications and limitations.
 - Consider CT, cystoscopy, IVP, ultrasound, cystourethrogram, and retrograde pyelography.
3. Describe the staging and management of renal cell carcinoma, transitional cell carcinoma and bladder carcinoma.
4. Discuss the risk factors for composition of, and management of renal and ureteral calculi.
5. Discuss the clinical presentation of renal and ureteral calculi.
6. Discuss the etiologies and diagnostic evaluation of a patient with dysuria.
7. Outline the etiologies and work-up of a patient with pneumaturia.
8. Outline the evaluation and treatment options for patients with urinary incontinence.
9. Outline the initial evaluation of patients presenting with urinary frequency, nocturia, urgency or urinary retention.
 - Consider pertinent H & P, and diagnostic tests including prostate ultrasound.

Vomiting, Diarrhea, Constipation

Assumptions

Student understand the anatomy, embryology and physiology of the gastrointestinal tract.

Vomiting

Objectives

1. Discuss in general, the differential diagnosis for a patient with emesis.
 - Consider timing and character of the emesis and associated abdominal pain.
 - Contrast etiologies in infants, children and adults.
 - Contrast dysmotility vs. ileus vs. mechanical obstruction.
2. Describe the clinical presentation and etiologies of gastric outlet obstruction.
3. Describe the types of neoplasms that occur in the stomach and discuss diagnosis and prognosis for each.
4. Discuss the principles of curative and palliative surgery for patients with gastric neoplasm.
5. Discuss the diagnosis and management of obstructive ulcer disease.
6. Describe the signs and symptoms of small bowel obstruction.
7. Describe the common etiologies of mechanical small bowel obstruction.
8. Describe the pathology and relative frequency of malignant and benign small bowel neoplasms.
9. Discuss the potential complications and management of small bowel obstruction.
10. Outline the initial management of a patient with mechanical small bowel obstruction, including laboratory tests and x-rays.
11. Contrast the presentation and management of partial vs. complete small bowel obstruction.
12. Differentiate the signs, symptoms and radiographic patterns of paralytic ileus and small bowel obstruction.

Diarrhea

Objectives

1. Discuss the differential diagnosis of diarrhea in adults.
 - Consider chronicity, absence or presence of blood and associated pain.
 - Consider infectious causes.
2. Describe the presentation and potential complications of ulcerative colitis and Crohn's disease.
3. Contrast the pathology, anatomic location and pattern, cancer risk and diagnostic evaluation of ulcerative colitis and Crohn's disease.
4. Discuss the role of surgery in the treatment of patients with ulcerative colitis and Crohn's disease.
5. Discuss the clinical manifestations, risk factors, diagnosis and management of pseudomembranous colitis.

6. Outline the risk factors, presentation, diagnosis and management of ischemic colitis.

Constipation

Objectives

1. Discuss the potential etiologies of constipation in adults and children.
 - Consider chronic vs. acute.
2. Describe the clinical presentation and etiologies of large bowel obstruction.
3. List the diagnostic methods utilized in the evaluation of potential large bowel obstruction, including contraindications and cost effectiveness.
4. Outline the diagnosis and management of colonic volvulus, diverticular stricture, fecal impaction and obstructing colon cancer.
5. Outline the treatment of carcinoma located at different levels of the colon, rectum and anus. Include a discussion of the use of radiotherapy and chemotherapy for each.
6. Describe the postoperative follow-up of patients with colorectal carcinoma.
7. Discuss the staging and survival of patients with colorectal carcinoma.
8. Describe the presentation and treatment of acute and chronic colonic pseudo-obstruction.

Problems

1. A 54-year-old woman presents with a two day history of crampy abdominal pain followed by episodes of bilious emesis. She had previously undergone hysterectomy for treatment of cervical cancer.
 - What further data should be obtained from the patient's history?
 - What findings should be looked for on physical exam?
 - What laboratory tests should be ordered?
 - What is the initial management plan?
 - What diagnostic tests should be ordered?
2. A 72-year-old man presents with a two month history of gradually increasing constipation.
 - What further tests are indicated?
 - What findings would be suggestive of carcinoma?
3. A mass is palpable on rectal exam.
 - What further tests are indicated?

Skills

1. H & P to include abdominal and rectal exam.
2. Nasogastric tube insertion.
3. Interpretation of abdominal x-rays, including small bowel obstruction, ileus and colonic obstruction.

Prevention

1. Indications for and methods of screening for colorectal carcinoma.
2. Use of surveillance endoscopy in ulcerative colitis.

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