

---SURGICAL INFECTIONS---

Pathogenesis of infection

Primary determinant of local infxn: density of bacteria vs efficiency of host response

Goal of surgical Rx: to decrease [bact] and enhance host defense

Factors favoring infxn:

Local	Systemic
Hi [bact]	Inadequate oxygenation
Foreign body	Diabetes (decr PMN mobility)
Hematoma	Obesity (fat has poor blood supply)
Necrotic tissue	Immunosuppression

Wound Classification

Wound	Bact.	Source	Infxn %	Example
Clean	G +	Skin, OR	3%	IHR
Clean-contaminated	Poly	Endogenous colonization	5-15%	Elective colon
Contaminated	Poly	Gross contam	15-40%	Spill in GI surg
Dirty	Poly	Known infxn	40%	Abscess drain

Prevention of infections

Shorter op time = lower wound infxn rate

Hemostasis important (limits hematoma)

Limit suture material (foreign material)

Limit electrocautery (creates devascularized tissue)

Post op dressing prevents infxn in first few hours (until wound has coagulated)

Periop ABX

ABX must be present at time of contamination to prevent infxn

Pre op ABX useful for clean-contam, and contam wounds (but not for clean)

ABX also used pre op if foreign body will be implanted

PO ABX decrease infxns to <10% for elective colon resection

Contaminated/dirty wounds

Close only fascial layers

Wet to dry dressings

Close wound on POD 4 or 5 (prolonged post op ABX do not speed up closure)

Management of established infections

Most surgical infxns require drainage in addition to ABX

Factors in choosing ABX: [bact], tissue environ, [ABX], ABX toxicity and metabolism

► Community acquired

Skin/soft tissue –break in skin

--Group A Strep cellulitis: blanching erythema; Rx: hi dose PCN

--Staph cellulitis: pus, erythema, easily spread; Rx: I+D, nafcillin/oxacillin

--Necrotizing Strep gangrene:

blister, necrosis, nonblanching erythema (decr. blood to skin), gray d/c

Rx: I+D, hi-dose PCN, Clinda

--Hidradenitis suppurativa: Staph in apocrine sweat glands; Rx: I+D

Breast abscess: Staph, very tender; Rx: urgent I+D, nafcillin/oxacillin
Perirectal abscess: very tender; Rx: I+D under GA, fecal diversion, broad spectrum ABX
Gas gangrene – Clostridium perfringens

Cellulitis and myonecrosis d/t contaminated objects

Brown, watery drainage w/ tenderness

Rx: immed radical debridement, massive dose PCN (or metro/clinda), tetanus Rx

Tetanus – Clostridium tetani

2day-weeks of incubation

Sx: h/a, restless, stiff jaw, muscle contractions near wound

Tetanus prone: if wound >6hrs, non-sharp inj, non-clean, contaminated wound

Rx: PCN, tetanus IG if unknown/incomp imms, tetanus toxoid (if unknown /
incomp imms OR booster >5yrs ago in Tet prone / >10yrs ago in Non Tet prone)

Hand infections

--Paronychia: prox fingernail; Rx: I+D (may require nail removal), hot soaks

--Felon: pulp space of digits after penetrating inj, may become subungual abscess; Rx: I+D

--Tenosynovitis: tendon sheath; Rx: I+D entire sheath, ABX

--Fascial space: thenar/hypothenar/mid palm; Rx: urgent I+D, ABX

--Human bites: polymicrobial; Rx: I+D, elevate hand, ABX, don't close

--Animal bites: aerobic Pasteurella; Rx: I+D

Foot infections

Esp in diabetic pts

Neuropathy, bone deformity, vascular dz, pressure ulceration

Dx: XR, bone scans, cultures

Rx: ABX, I+D, drain, relieve pressure

Cx: osteomyelitis, amputation

Biliary tract infections

E. coli, Klebsiella, enterococci (not anaerobes)

Ascending cholangitis = toxic pts; urgent drainage required (surg or percutaneous)

Acute peritonitis

Perforation of hollow viscus, ascites, or peritoneal dialysis catheter infxn

Perf appendix: cover for aerobes and anaerobes

Colon perf: most virulent; d/t cancer, diverticulitis; Rx: IVF, ABX, surg

Fecal diversion if L sided perf

Viral infections

--Hep B: 5-10% of infected pts become chronic carriers; vaccine very effective

--Hep C: 60% become chronic carriers; No vaccine

--HIV

► Hospital acquired

Post op fever: 5 'W's: wind, water, wound, walk, wonder drugs

Pulmonary infxn

Atelectasis (#1 cz of fever POD 1-2)

Rx: early ambulation, coughing, incentive spirometry, pain control

If fever persists: get CXR

Pneumonitis

d/t fluids, ET tube, ventilator; usu G – nosocomial bugs

May need culture via bronchoscopy
Rx: early ventilator weaning, frequent suction of ET

Aspiration

Pts with altered mental status, head inj, elderly
Gastric decompression decreases risk
No ABX until cx via bronchoscopy

UTI

Bacteremia is uncommon (r/o other czs of fever)
Usu d/t G –
No ABX needed unless + blood cx
Remove or change foley and increase IVFs

Wound infxn

Red, warm, tender, w/ pus
Requires opening of wound, drainage
No ABX needed unless severe or progressive cellulitis present

Intraabdominal infxn

Abd pain, tenderness, fever, leukocytosis = most imp indicators of need for reop
Most postop intraabd infxns = abscess (not peritonitis)
Rectal exam if pelvic abscess suspected
U/S helpful; indium-111 leuko scan w/ CT if equivocal
Infxn usu d/t E. coli and anaerobes
Rx: ABX + drainage

Lung empyema

After thoracic surgery or chest tube placement
Cx and ABX
Rx: needle drainage; possible rib resection to marsupialize empyema

Foreign body associated infxn

+ blood cx, esp Staph aureus or epidermidis
Remove catheter or other foreign body (fb)
Persistent fever, leukocytosis = poss thrombophlebitis (reqs I+D of vein)
Dx: U/S or CT show fluid collection around fb

Postsplenectomy sepsis: vaccinate against H. flu, S. pneumo, N. mening

C. diff: pts on ABX; Rx: PO vanco or metro, resume PO feeds (reestablishes gut flora)

Sepsis

Fever, tachycardia, tachypnea, leukocytosis (clinical dx, blood cx not nec)
Mult organ dysfxn synd (MODS) may cont after sepsis d/t inflamm resp
Rx: ABX, maintain oxygenation and cardiac outpu