

- ACTINOMYCES ISRAELII
 - Normal microbiota
 - Oral and facial abscess that drain through sinus tract
 - Dental caries/extraction and other maxillofacial trauma
 - Yellow "sulfur granules"
 - PID and IUD
 - Tx: Sulfonamids

- NOCARDIA
 - Found in soil (no spores)
 - Pneumonia (immunocompromised, -PPD)
 - cutaneous infection after trauma in immunocompetent
 - Cerebral abscess
 - Tx: Penicillin

- S AUREUS
 - Protein A binds Fc region of IgG
 - Panton-Valentine leukocidin, which kills leukocytes and causes tissue necrosis
 - MRSA- resistance due to altered PBPs
 - hemolitic
 - β
 - hemolitic
 - Toxin mediated disease
 - Toxic shock syndrome(TSS-1)
 - Scalded skin syndrome (exfoliative toxin)
 - Rapid onset food poisoning (enterotoxin)
 - Inflammatory disease
 - Skin infections
 - Organ abscesses
 - Pneumonia (after influenza virus)
 - Infective endocarditis
 - Septic arthritis
 - Osteomyelitis

BRANCHING FILAMENTS

NOT ACID FAST, ANAEROB

ACID FAST,AEROB

- BACILLUS CERUS
 - Enterotoxin food poisoning (reheated rice syndrome), vomiting or diarrheal type, non-bloody diarrhea
 - Tx: supportive care

MOTILE

- BACILLUS ANTHRACIS
 - Exotoxin; PA, LF, EF
 - Polypeptide capsula (poly D-glutamate), colonies medusa head appearance
 - Cutaneous; ulcer with black eschar
 - painless
 - Pulmonary; woolsorter's disease, prophylaxis; ciprofloxacin and doxycycline
 - Both form may be complicated by hemorrhagic meningitis

NON-MOTILE

- CLOSTRIDIUM TETANI
 - Tetanospasmin
 - Spastic paralysis
 - Trismus (lock jaw)
 - Risus sardonius (raises eyebrows and open grin)
 - Opisthotonus (spasms of spinal extensors)
 - Prevent with tetanus vaccine. Treat with antitoxin +/- vaccine booster, antibiotics, diazepam (muscle spasms), and wound debridement

MOTILE

- CLOSTRIDIUM DIFFICILE
 - A and B toxin
 - Both toxins lead to watery diarrhea then pseudomembranous colitis
 - Often 2 to antibiotic use, especially clindamycin, ampicillin, cephalosporins, fluoroquinolones, associated with PPIs
 - Fulminant infection; Toxic megacolon, ileus, shock
 - Tx: Oral vancomycin or fidaxomicin. For recurrent cases, prior regimen or fecal microbiota transplant

ANAEROB

- CLOSTRIDIUM BOTULINUM
 - Preformed toxin(in canned foods)
 - Diplopia
 - Dysarthria
 - Dysphagia
 - Dyspnea
 - Descending flaccid paralysis
 - Spore(In babies, Infant botulism syndrome)
 - Tx: Human botulinum immunoglobulin

NON-MOTILE

- CLOSTRIDIUM PERFRINGENS
 - α Toxin (lecithinase, a phospholipase)
 - Gas gangrene
 - Hemolysis
 - Spore \rightarrow vegetative bacteria \rightarrow Heat labile ET, late onset (10-12 hours) food poisoning symptoms, resolution in 24 hours

NON-MOTILE

- CORYNEBACTERIUM DIPHTERIA
 - Exotoxin
 - Inhibits protein synthesis via ADP-ribosylation of EF-2, leading necrosis in pharynx, cardiac, and CNS tissue
 - Pseudomembranous pharyngitis (grayish-white membrane)
 - Lymphadenopathy ("bull's neck" appearance)
 - Tx: diphtheria antitoxin +/- erythromycin or penicillin

MOTILE

GRAM+

BACILLI(RODS)

COCCI

SPORA FORMING

NON-SPORA FORMING

COAGULASE+

STAPHYLOCOCCUS

NOVOBIOCIN SENSITIVE

S EPIDERMIDIS(urease+)

- Normal microbiota of skin, contaminates blood cultures
- Infects prosthetic devices(valve and joints)
- Catheter
 - Urinary \rightarrow UTI
 - IV \rightarrow Sepsis

COAGULASE-

NOVOBIOCIN RESISTANT

S SAPROPHYTICUS(urease+)

- Normal microbiota female genital tract and perineum
- Second most common UTI (most common is E coli)

CATALASE+

STREPTOCOCCUS

CATALASE-

HEMOLYSIS

Growth in 6.5% NaCl and PYR status+

ENTEROCOCCUS (E FAECIUM AND E FECALIS)

- Normal colonic microbiota
- UTI, Biliary tract infections, and infective endocarditis(following GI/GU procedures)
- VRE(vancomycin-resistant enterococci) are important cause of healthcare-associated infection
- Tx: Tigacycline and Linezolid

γ No hemolysis

No growth in 6.5% NaCl and PYR-

NONENTEROCOCCUS (S BOVIS)

- Colonizes the gut
- S gallolyticus (S bovis biotype 1) can cause bacteremia and infective endocarditis
- Patients with S bovis endocarditis have increase incidence of colon cancer

α Partial hemolysis

Optochin sensitive, bile soluble

S PNEUMONIA (ENCAPSULATED)

- Lanced shaped diplococci
- IgA protease
- Most commonly cause MOPIS
- Meningitis
- Otitis media
- Pneumonia(rusty sputum)
- Sinusitis
- Tx: Azitromycin and Ceftriaxone

Optochin resistant, bile insoluble

VIRIDANS STREPTOCOCCI (NO CAPSULA) S MUTANS AND S MITIS

- Streptococcus mutans and mitis cause dental caries (biofilm formation)
- Normal microbiota of the oropharynx
- S Sanguis makes dextrans that bind to fibrin-platelet aggregates on damaged heart valves, causing infective endocarditis

β Complete hemolysis

Bacitracin sensitive and PYR+

GROUP A (S PYOGENES)

- Erythrogenic exotoxin
- DNase
- Virulence factors
 - Streptokinase
 - Streptolysin O
- Pyogenic
 - Pharyngitis
 - Cellulitis
 - Impetigo("honey crusted" lesions)
 - erysipelas
- Toxicogenic
 - Scarlet fever
 - Toxic shock-like syndrome
 - Necrotizing fasciitis

Bacitracin resistant and PYR-

GROUP B (S AGALACTIAE)

- CAMP+, Hippurate+, colonizes vagina
- Neonates
 - Sepsis
 - Pneumonia
 - Meningitis

Immunologic

- Rheumatic fever
- Glomerulonephritis

Screen pregnant patients at 35-37 weeks gestation with rectal and vaginal swabs

Patients with + culture receive intrapartum penicillin/ampicillin prophylaxis

LISTERIA MONOCYTOGENES(cold enrichment)

- β hemolitic
- Facultative intracellular
- Acquired by ingestion of unpasteurized dairy products and cold deli meats, transplacental transmission, by vaginal transmission during birth
- Listeriolysin generates pores in phagosomes
- Pregnant patients
 - Amnionitis, septicemia, and spontaneous abortion
- Immunocompromised patients, neonates, and older adults
 - Granulomatous infantisepsis(neonates) and meningitis
- Healthy individual
 - Self limited gastroenteritis
- Tx: Ampicillin