

- D:** caused by infection with *Actinomyces* spp.; characterised by indolent abscesses and chronic sinuses
- A:** *Actinomyces* spp. are G +ve anaerobes; part of normal buccal flora; often found in association with G –ves; disease most often due to *A. israelii*, *A. naeslundii*, *A. propionicum* & *A. viscosus*
- A/R:** recent dental work; poor dental hygiene; trauma; human bites; IUCC (rare)
- E:** worldwide; rare
- H:** constitutional upset; abscess or sinus formation; symptoms of local infiltration, e.g. haemoptysis
- E:** soft, relatively non-tender head & neck swellings → grow slowly → discharge externally; abscesses are cold; 25–50% involve an internal organ
- P:** abscess formation → cross-fascial planes; may spread via blood
- I:** discharge/pus/sections – macroscopically for sulphur granules, H & E, silver or G stain for organisms, culture & sensitivity; blood cultures
- M:** prolonged high-dose antibiotics – penicillins, sulphonamides, erythromycin, chloramphenicol or tetracycline; surgical drainage & debridement
- C:** abdominal organ involvement (25–50%); myopericardial invasion (rare)
- P:** myopericardial invasion fatal, otherwise good; prevention – improved dental hygiene

- D:** infections with adenoviruses cause sore throat, diarrhoea, conjunctivitis, haemorrhagic cystitis or URTI
- A:** adenoviruses are unenveloped DNA viruses; 40 & 41 → diarrhoea; 1, 2, 5 & 6 → endemic URTI; 3, 4 & 7 → epidemics of URTI; 3 & 7 → pharyngoconjunctivitis; 7, 11 & 21 → haemorrhagic cystitis; 8 → conjunctivitis
- A/R:** infants; military recruits; immunocompromised
- E:** worldwide distribution; 40 & 41 cause 4–8% of infantile gastroenteritis; temperate regions ↑ URTI in autumn/winter
- H:** 40 & 41: IP 8–10/7 → diarrhoea, no pus or blood; symptoms of URTI; eye pain & redness; haematuria
- E:** signs of pharyngitis, tonsillitis or conjunctivitis
- P:** acute lytic infection & chronic latent disease
- I:** blood/urine/stool/tissue – culture; immunofluorescence
- M:** usually self-limiting; consider Ig if compromised host
- C:** intussusception; meningoencephalitis
- P:** extremely low mortality for diarrhoea; respiratory infection may rarely prove life-threatening in compromised host or neonates

- D:** infections due to alphaviruses are named for the viruses that cause them – CHIK, Sindbis, W/E/VEE
- A:** alphaviruses are RNA viruses; spread by mosquito – CHIK & VEE *Aedes* & *Culex* spp., Sindbis *Culex* spp., EEE *Culex* & *Culiseta* spp., WEE *Culex*, *Culiseta*, *Aedes* & *Anopheles*
- A/R:** infants; young males; rural environment; malnutrition; occupational exposure
- E:** CHIK – Africa, India, S.E. Asia; Sindbis – Africa, India, tropical Asia, Australia; WEE – N.W. America; EEE – USA, C. & S. America; VEE – S. America
- H:** CHIK: IP 2–12/7 → biphasic illness Sindbis: (only occasionally overt disease in humans) → fever, rash, arthralgia, myalgia, malaise, headache W/E/VEE: IP 2–14/7 → short, sharp febrile attack – malaise, headache, stiffness, drowsiness → possible 2nd phase – excitability, somnolence, delirium, convulsions, paralysis, coma; EEE more severe than others
- E:** CHIK – rash is maculopapular, pruritic W/E/VEE – 2nd stage meningoencephalitic signs (stiff neck, drowsiness)
- P:** Ab neutralisation of virus after short illness; 2nd stage virus → nervous system → invades cells (grey matter) → destruction
- I:** virus can be isolated from blood in acute stage; Ab titres ↑ in convalescent sera
- M:** supportive
- C:** CHIK – arthralgia, arthritis
W/EEE – neurological complications in young children
- P:** majority recover completely → immunity; W/EEE 10% mortality, some permanent neurological sequelae in survivors; CHIK mortality up to 3% if < 1-year-old or > 50; prevention – avoid mosquito bites; vaccine available for selected populations

- D:** infection with *Entamoeba histolytica* causing diarrhoea or extragastrointestinal diseases such as liver abscesses
- A:** *E. histolytica* is a parasite; transmission of cysts is faecal–oral
- A/R:** very young; malnutrition; immunocompromised; pregnancy
- E:** Asia, Africa, Middle East, C. & S. America; 480 million cases with annual mortality of 100 000
- H:** travel to endemic area; variable IP → asymptomatic or insidious onset abdominal discomfort, diarrhoea → ↑ severity, bloody, mucoid, tenesmus (50%)
- E:** frequently tender over caecum & colon; may have tender hepatomegaly
- P:** colitis of large intestine; possible mucosal ulceration; invasive amoebae may ingest RBCs
- I:** FBC – ↑ WBC, ↓ Hb; U & E – picture of dehydration; stool × 3 – microscopy, culture & sensitivity; anti-amoeba Abs; +/- AXR; +/- sigmoidoscopy & biopsy
- M:** rehydrate if necessary; metronidazole then diloxanide furoate to eliminate cysts plus broad-spectrum if peritonitis
- C:** dehydration; fulminant colitis; amoeboma in colon; chronic amoebiasis; amoebic liver abscess
- P:** good if managed well

- D:** anaerobes cause abscess formation as well as GI & RT disease
- A:** part of normal GIT & oral flora; *Fusobacterium necrophorum* causes Lemierre's syndrome, internal jugular vein septic thrombophlebitis; *Bacteroides fragilis*, *Clostridia*, *Peptostreptococcus* & *Prevotella* cause abscess formation, malabsorption, aspiration pneumonia & empyema
- A/R:** immunocompromised; starvation; alcoholism; diabetes; scleroderma; ileal bypass & blind loops of bowel; colonic cancer
- E:** worldwide
- H:** predisposing factors; abdominal or chest symptoms; sore throat (before Lemierre's)
- E:** signs of abscess; chest signs suggestive of pneumonia; tender neck; lymphadenopathy
- P:** abscess formation
- I:** blood/pus – microscopy, culture & sensitivity
- M:** surgical drainage; penicillin or metronidazole
- C:** necrotising jugular septic thrombophlebitis; septicaemia
- P:** mortality high in compromised & colon cancer

- D:** mostly a disease of domestic herbivores (rare in man) caused by *Bacillus anthracis*
- A:** *B. anthracis* is an aerobic G +ve rod; produces heat and drying resistant spores; lives in topsoil; transmission is via direct inoculation via skin, inhalation or ingestion
- A/R:** wool workers are relatively immune due to high exposure; used as a biological weapon
- E:** worldwide; rare in humans
- H:** cutaneous: skin inoculation → IP 2–3/7 → small skin papule → vesicles around central lesion which ulcerates & forms painless eschar → spreads to involve vesicles → resolution over 2–6/52
 pulmonary: spores from contaminated hides → short IP → fever, chills, cyanosis, SOB
 intestinal: spores from contaminated meat → non-specific vomiting, diarrhoea, fever → occasionally haematemesis, dysenteric stools
- E:** cutaneous: lesions usually on head and neck
 pulmonary: fluid-filled lungs; pleural effusion; mediastinitis
 intestinal: no obvious signs
- P:** organisms dwell in capillaries → vasculitis, necrosis
- I:** FBC – ↑ WBC; scraping/aspiration – microscopy, culture & sensitivity; blood cultures; CXR – mediastinal widening
- M:** penicillin; prophylaxis ciprofloxacin
- C:** cutaneous: bacteraemia; massive oedema → respiratory obstruction
 pulmonary: bacteraemia
 intestinal: bacteraemia; haemorrhage; shock
- P:** cutaneous: uncomplicated is non-life-threatening
 pulmonary: fatal if not diagnosed/treated early
 intestinal: most patients recover spontaneously
 prevention: vaccine available

- D:** infection with *Aspergillus* spp. causing a spectrum of disease
- A:** *Aspergillus* spp. are fungi; important species are *A. fumigatus*, *A. flavus* & *A. niger*; spores found in soil, dust, decaying vegetable matter; infection is via inhalation of spores
- A/R:** immunocompromised (invasive disease); structural lung abnormality (aspergilloma); atopy (ABPA)
- E:** worldwide
- H:** ABPA: asthma, chronic cough
aspergilloma: cavitating lung disease in past, e.g. TB; intermittent cough; may develop haemoptysis
invasive: history of immunocompromise; symptoms of invasion
- E:** ABPA: wheeze
- P:** ABPA: hypersensitivity reaction
aspergilloma: formation of a fungal ball
invasive: invasion of lung, paranasal sinuses, CNS, kidney, bone, etc. by fungus
- I:** ABPA: CXR – more severe appearance than expected; peripheral shadowing aspergilloma: CXR/CT chest – SOL within a cavity with halo; sputum microscopy, culture & sensitivity
invasive: blood cultures; Ag detection; tissue biopsy
- M:** ABPA: steroids
aspergilloma: surgical excision
invasive: amphotericin or voriconazole; try and reverse/decrease immunocompromise
- C:** local invasion; bone erosion
- P:** high risk of fatality with invasive disease

Atypical mycobacteria

DISEASES

- D:** mostly incidental and opportunistic infections due to *Mycobacterium avium* & *Mycobacterium intracellulare* but also cutaneous granulomatous skin diseases
- A:** environmental saprophytes; Buruli ulcer – *Mycobacterium ulcerans*; swimming pool or fish tank granuloma – *Mycobacterium marinum*
- A/R:** predisposing lung lesion, e.g. COPD, old TB, CF; HIV; congenital immune deficiencies; ♂ > ♀
- E:** worldwide
- H:** pulmonary: insidious onset cough, weight loss in healthy/compromised lymphadenopathy: < 5 years of age, healthy/compromised
post-inoculation: Buruli ulcer; swimming pool granuloma
disseminated: HIV or congenital immune deficiency
- E:** few signs
- P:** invasion of macrophages → immune response → granuloma formation
- I:** CXR; sputum/biopsy/excision – microscopy with Z-N stain, culture & sensitivity
- M:** antibiotics depend on site, severity, underlying condition, sensitivities, e.g. combinations of clarithromycin, doxycycline, rifampicin, ethambutol, isoniazid; surgical excision of lesion/lymph nodes/skin
- C:** dissemination
- P:** excellent in children with cervical adenitis; poor in immunocompromised

- D:** zoonotic infection with *Babesia* spp.
- A:** *Babesia* spp. are protozoan parasites of domestic & wild animals; transmission is via tick bite; mostly *B. bovis*, *B. microti*, *B. divergens*
- A/R:** splenectomy
- E:** rare; Europe mostly *B. divergens* spread by *Ixodes ricinus*; N. America mostly *B. microti* spread by *Ixodes dammini*
- H:** *divergens/bovis*: IP 1–4/52 → vague unwellness → fever, prostration, jaundice, fatigue
microti: IP 1–3/52 → mostly subclinical or anorexia, fatigue, fever, sweating, rigors, myalgia
- E:** *divergens/bovis*: splenectomy scar
microti: fever, mild splenomegaly +/- hepatomegaly
- P:** red cell infiltration & lysis
- I:** FBC – ↑ WBC, ↓ Hb; U & E ↑ urea; ↑ bilirubin (unconjugated); urinalysis – haematuria, proteinuria; blood film for parasites; consider IFA, PCR
- M:** *divergens*: anecdotal – diminazene (used in animals); co-trimoxazole + pentamidine; massive exchange transfusion + clindamycin + oral quinine
microti: quinine + clindamycin + blood or RBC exchange transfusion
- C:** ARF; haemolytic anaemia
- P:** *divergens/bovis*: untreated, splenectomised → death
microti: usually mild → spontaneous recovery

DISEASES

- D:** cause of food poisoning with vomiting, diarrhoea or both
- A:** *Bacillus cereus* is a G +ve aerobe; can form spores; ubiquitous in soil; forms heat stable emetic toxin & heat labile enterotoxin
- A/R:** rice boiled in bulk and reheated, e.g. Chinese restaurants
- E:** worldwide; emetic toxin formed in food; enterotoxin formed in food but also in gut
- I:** emetic toxin: IP 1–5 h → vomiting; may have history of Chinese meal or similar
enterotoxin: IP 8–16 h → diarrhoea, abdominal pain
- E:** non-specific abdominal tenderness
- P:** non-specific
- I:** stool sample – microscopy, culture & sensitivity; also test food samples
- M:** supportive
- C:** dehydration
- P:** symptoms generally do not persist beyond 24 h