Microbial Diseases of the Digestive System

Viral and Protozoan Diseases

Mumps

• Agent is a paramyxovirus
• Transmitted by the respiratory route, systemic spread leads to colonization and inflammation of parotid salivary glands
• Complications may include inflammatory damage to testes (orchitis), meninges, ovaries, pancreas
• Controlled with an attenuated vaccine (MMR)

Viral Hepatitis - *Hepatitis A*

• Agent is a naked RNA virus
• *Infectious hepatitis*
• Transmission is fecal-oral
• Asymptomatic infection is common, may contribute to transmission
• Disease is acute, leading to strong immunity
• Killed vaccine available, but not universal
Viral Hepatitis - *Hepatitis B*

- Agent is an enveloped DNA virus
- *Serum hepatitis*
- Sexual and other direct contact transmission, also through contaminated blood
- Occupational hazard for health care and emergency workers
- Concern is that some infections become *chronic*
  - Chronic carriers are a persistent source of transmission
  - Chronic infection can lead to liver damage, cancer
- Controlled by vaccination with *Hepatitis B surface antigen* (HBsAg)

Viral Hepatitis - *Hepatitis C*

- Agent is an enveloped RNA virus
- Originally identified as non-B serum hepatitis
- More likely to lead to chronic infection than hepatitis B virus
- Concerns with high rate of liver disease, high rate of chronic infection
- No reliable control, but antiviral therapy helps some

Viral Hepatitis - *Hepatitis D*

- *Delta agent*
- RNA genome, requires a Hepatitis B Virus envelope for transmission, hence only infects in combination with HBV
- *(So…Is this a viral virus?)*
- Hepatitis B accompanied by the delta agent progresses more rapidly
Viral Hepatitis - *Hepatitis E*

- Naked RNA virus, unrelated to Hepatitis A Virus
- Fecal-oral transmission
- Infection is acute, unusually high mortality of pregnant women
- Most common in southern Asia

Viral Gastroenteritis

- Very common acute infectious disease
- Common agents
  - *Rotavirus*
  - *Human enteric calciviruses*, including the “Norwalk Agent”

Fungal Intoxications

- Mostly diseases of livestock through contaminated feed
- Ergot poisoning
  - Toxins produced by *Claviceps purpurea*
  - *Ergotism* in humans has been recorded as “St. Anthony’s fire”
- Aflatoxin poisoning
  - Toxins produced by *Aspergillus flavus*
  - Some concern for low-level exposure through contaminated peanuts
Protozoan Infections

- Mostly transmitted by water contaminated with resistant cysts
- Treatment difficult
- Giardiasis
  - *Giardia lamblia*
  - Relatively common in surface waters
- Cryptosporidiosis
  - *Cryptosporidium parvum*
  - Significant burden to immunocompromised patients
- *Cyclospora* infection has been linked to contaminated produce
- Amoebic dysentery
  - *Entamoeba histolytica*
  - May multiply in intestinal epithelium, causing severe disease