Pinworms
(Enterobius Vermicularis)
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History of Pinworms

- Ancient:
  - First dates of pinworms recorded by Roman-occupied Egypt (30BC-395AD)
  - Oldest pinworm found in human coprolites 7800 BC from Danger Cave, Utah.
  - Originated from Beringia
  - Live in particular soil temp.
Interesting Facts

- 20% of children get pinworms
- More common in preschool children
- Adults are usually infected because of family members
- Pinworms eggs can survive up to 3 weeks on surfaces such as clothing, counters, linen and toys.
- Infection may be airborne.
Case of Pinworms

- In November 2013, Jane Doe took her two daughters to the doctors office due to discomfort of the perianal area.
- Daughters were diagnosed with pinworms.
- Jane a few weeks later started feeling a tickling sensation in her rectum and ran to the bathroom and found 2 worms.
- She was asymptomatic for several weeks after that incident until the tickling sensation began again.
  - She checked her bowl movements, no evidence of pinworms
    - An increase bowl movement after the first 2 worms found
- Major discomfort and itchiness began and she managed to remove another pinworm several weeks after the first incident.
- She then went to the doctors office to be officially diagnosed with pinworms and received medication for the infection.
Pinworms....

- Pinworms are helminthes pathogens
- Size: Females range from 8-13mm, Males range from 3-6mm
- Shape/Color: White, long, thread-like
- Motility: Females migrate at night to the anus to lay eggs which cause the discomfort and itchiness.
- Mutation occurs in the lower intestine
- No staining/ Culture characteristics
- After the use of scotch tape, a microscope is used to view if eggs are present.
Pathophysiology

- Primary symptoms: Pruritus at nighttime. Usually 2 two hours into a sleep is when the female pinworm migrates to the anus to lay eggs and causes prickling sensation.
- Itching is caused by female pinworms and ova moving.
- Incubation period- 1-2 months
- Eggs can take up to 3 weeks to hatch.
- Male pinworms die after mating in the lower intestine.
- Female pinworms die after laying eggs.
- People with pinworms are asymptomatic unless an acute infection occurs in the lower intestine.
Transmission....

- Person to person transmission
- Do not rely on vectors as a transmission
  - Eggs are ingested by a person (most commonly a child) by touching contaminated surfaces such as clothing, curtains, carpeting, etc.
  - Eggs may be airborne
  - Itching of the anus, eggs contaminating fingernails. (self-infection, fingernails to mouth)
  - Touching surfaces without proper hand hygiene.
Life cycle of a pinworm
Diagnosis

- If pinworms are suspected, transparent scotch tape is placed on the anal region.
- The eggs then stick to the tape and are then examined under a microscope.
Prevention

- Washing hands before and after using the bathroom
- Washing hand after changing diapers or helping toddlers wipe
- Keep fingernails short and clean
- No nail-biting
- Refrain from scratching anal area
- Chaining into freshly washed underwear daily
- Overall having a clean sanitary environment
Treatment

- Albendazole (Albenza)
  - It is a single tablet that kills the worms
  - Eggs can survive for a few weeks. It is recommended to take a second dose two weeks later to lessen the chance of reinfection

- Mebendazole (Vermox)
  - A single dose should be taken and repeated again two weeks later
Treatment

- Because it is common for everyone in the household to be infected. It is recommended for everyone to be treated around the same time.
- Tap water enemas may also be recommended to help flush out the pinworms and reduce the symptoms.
Cases

- An estimated 40 million people are diagnosed in the USA each year.
- No other statistics in specific areas in the USA were found, but are most common in schools, daycare centers, and other institutional settings.
- India 61%
- England 50%
- Thailand 39%
- Sweden 37%
- Denmark 29%
Importance?

- It is very easily transmitted among humans
- Most common infected people are children of 5-10 years of age
If let untreated
  - can cause abdominal pain
  - can rob the body of essential nutrients and cause anemia
  - in females, can cause urinary tract infections
  - pinworms can migrate and cause inflammation to the vagina, uterus, fallopian tubes, and other pelvic organs
References

  This website is detailed about the pinworm, and gives a summary about what happens if the pinworm is left untreated
  Medscape is another website where educates the reader about pinworms. It talks about the pathophysiology of the worm and who is more commonly exposed to the infection
  This website provides medical treatment for pinworms. Provides detailed description about the infection and how to detect it.
  This site provides general information about Pinworms such as description and pictures of how the worm looks like. Talk in depth about the infection and how to prevent and control it.
  This websites provides information about the history of pinworms. Educates any individual that wants to learn about the life cycle and method of transmission.