Adopt a Pathogen Week 2 - Tapeworms

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History (When/Who/How)

The discovery of tapeworms and our relationship with them as humans dates back centuries if not millennia. Hippocrates and other ancient physicians described symptoms consistent with tapeworm infection, however, it was not until 1782, that the beef tapeworm, *Taenia saginata* was described by Johann Goeze. Two years later, Goeze also was the first to propose the involvement of an intermediate host in the tapeworm life cycle. This was later confirmed in the 1850's, when the German physician Friedman Kuchenmeister conducted a series of experiments that were unethical at best. He fed contaminated pork, containing larval cysts, to a prisoner condemned to execution. When the prisoner was killed, Kuchenmeister dissected the man's intestines and confirmed the presence of young adult *T. solium* tapeworms. This was significant in furthering our understanding that humans are infected by tapeworms by consuming undercooked, contaminated meat containing tapeworm larvae.

Historical Burden

As mentioned earlier, tapeworms have burdened humans and other vertebrates for millennia. There is fossil evidence of tapeworm eggs found in shark feces, which dates back approximately 270 million years. Historically, tapeworm infection has caused chronic malnutrition, anemia, and abdominal illness, particularly in poorer communities with limited access to clean food and water.

Current Burden

Today, tapeworm infections continue to pose health problems around the world, particularly in developing countries as these populations are the most likely to suffer with poor sanitation and eat raw or undercooked meat. The highest rates of infection are found in Central America, Eastern Europe, sub-Saharan Africa, India, and parts of Asia and it is estimated that there are currently tens of millions of people infected with tapeworms worldwide. The severity of these infections can vary. While standard tapeworm infections (taeniasis) are often mild, cysticercosis can be fatal in some cases. When tapeworm larvae form cysts in the brain, it can lead to seizures, headaches, blindness and even death. Neurocysticercosis, when larval cysts form in brain tissue, is the leading cause of adult-onset epilepsy worldwide and is responsible for 50,000

deaths yearly. Additionally, the WHO has identified *Taenia solium* as the leading cause of death from food-borne diseases.

Sources

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