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FASCIOLIASIS

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ABSTRACT

Fasciolosis is a parasitic worm infection caused by the common liver fluke Fasciola hepatica as well as by Fasciola gigantica. The disease is a plant-borne trematode zoonosis and is classified as a neglected tropical disease .It affects humans, but its main host is ruminants such as cattle and sheep. The disease progresses through four distinct phases; an initial incubation phase of between a few days up to three months with little or no symptoms; an invasive or acute phase which may manifest with: fever, malaise, abdominal pain, gastrointestinal symptoms, urticaria, anemia, jaundice, and respiratory symptoms. The disease later progresses to a latent phase with less symptoms and ultimately into a chronic or obstructive phase months to years later. In the chronic state the disease causes inflammation of the bile ducts, gall bladder and may cause gall stones as well as fibrosis. While chronic inflammation is connected to increased cancer rates, it is unclear whether fasciolosis is associated with increased cancer risk.

1. INTRODUCTION

Fascioliasis is a parasitic infection caused by trematodes belonging to the Fasciola genus, primarily Fasciola hepatica and Fasciola gigantica. These liver flukes are found worldwide, especially in regions with extensive agricultural practices and inadequate sanitation. Fascioliasis is considered a zoonotic disease, as it primarily affects livestock, such as cattle, sheep, and goats, but humans can also become infected, often through consumption of contaminated water plants or undercooked meat from infected animals.

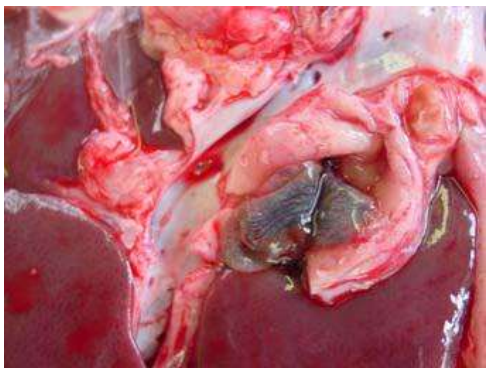
The life cycle of Fasciola involves a complex interaction between definitive hosts (usually herbivores), intermediate snail hosts, and the environment. After ingestion of contaminated food or water, larvae hatch in the intestines and migrate to the liver, where they mature into adult flukes. The adults produce eggs that are excreted into the environment, completing the cycle.

Human infections can lead to various clinical manifestations, ranging from mild symptoms like abdominal discomfort to more severe complications such as jaundice, liver fibrosis, and bile duct obstructions. In endemic areas, fascioliasis can cause significant morbidity and economic losses due to its impact on livestock and agricultural practices.

Despite the availability of effective treatments, such as triclabendazole, fascioliasis remains a significant public health challenge, particularly in developing countries where access to proper sanitation, veterinary care, and medical treatment may be limited. Preventive measures focus on improving hygiene, controlling snail populations, and ensuring proper cooking practices for food safety.

Signs and symptoms :

Humans



The course of fasciolosis in humans has 4 main phases:

Incubation phase: from the ingestion of metacercariae to the appearance of the first symptoms; time period: few days to 3 months; depends on number of ingested metacercariae and immune status of host

Invasive or acute phase: fluke migration up to the bile ducts. This phase is a result of mechanical destruction of the hepatic tissue and the peritoneum by migrating juvenile flukes causing localized and or generalized toxic and allergic reactions. The major symptoms of this phase are:

Fever: usually the first symptom of the disease; 40–42 °C (104–108 °F)

Abdominal pain

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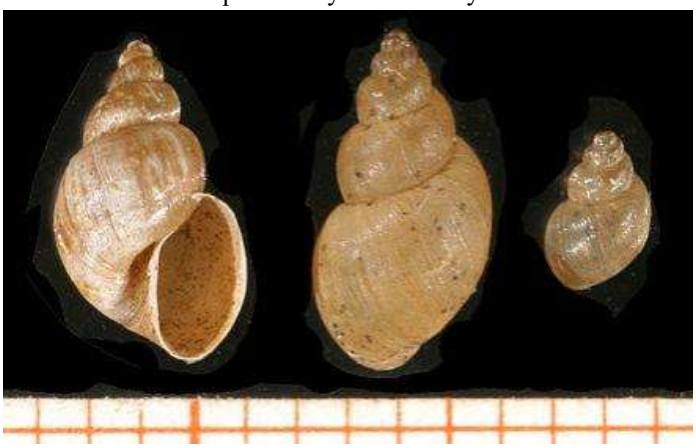
Gastrointestinal disturbances: loss of appetite, flatulence, nausea, diarrhea
Urticaria
Respiratory symptoms (very rare): cough, dyspnoea, chest pain, hemoptysis
Hepatomegaly and splenomegaly,
1)Ascites
2)Anaemia
3)Jaundice
Latent phase: This phase can last for months or years. The proportion of asymptomatic subjects in this phase is unknown. They are often discovered during family screening after a patient is diagnosed.
Chronic or obstructive phase:
This phase may develop months or years after initial infection. Adult flukes in the bile ducts cause inflammation and hyperplasia of the epithelium. The resulting cholangitis and cholecystitis, combined with the large body of the flukes, are sufficient to cause mechanical obstruction of the biliary duct. In this phase, biliary colic, epigastric pain, fatty food intolerance, nausea, jaundice, pruritus, right upper-quadrant abdominal tenderness, etc., are clinical manifestations indistinguishable from cholangitis, cholecystitis and cholelithiasis of other origins. Hepatic enlargement may be associated with an enlarged spleen or ascites. In case of obstruction, the gall bladder is usually enlarged and edematous with thickening of the wall .

Cause: Fasciolosis is caused by two digenetic trematodes F. Hepatica and F. Gigantica. Adult flukes of both species are localized in the bile ducts of the liver or gallbladder. F. Hepatica measures 2 to 3 cm and has a cosmopolitan distribution. F. Gigantica measures 4 to 10 cm in length and the distribution of the species is limited to the tropics and has been recorded in Africa, the Middle East, Eastern Europe and south and eastern Asia.In domestic livestock in Japan, diploid (2n = 20), triploid (3n = 30) and chimeric flukes (2n/3n) have been described, many of which reproduce parthenogenetically. As a result of this unclear classification, flukes in Japan are normally referred to as Fasciola spp.Recent reports based on mitochondrial genes analysis has shown that Japanese Fasciola spp. Is more closely related to F. Gigantica than to F. Hepatica.In India, a species called F. Jacksoni was described in elephants.

Transmission: Human F. Hepatica infection is determined by the presence of the intermediate snail hosts, domestic herbivorous animals, climatic conditions and the dietary habits of man. Sheep, goats and cattle are considered the predominant animal reservoirs. While other animals can be infected, they are usually not very important for human disease transmission. On the other hand, some authors have observed that donkeys and pigs contribute to disease transmission in Bolivia.Among wild animals, it has been demonstrated that the peridomestic rat (Rattus rattus) may play an important role in the spread as well as in the transmission of the parasite in Corsica. In France, nutria (Myocastor coypus) was confirmed as a wild reservoir host of F. Hepatica. Humans are infected by ingestion of aquatic plants that contain the infectious cercariae. Several species of aquatic vegetables are known as a vehicle of human infection. In Europe, Nasturtium officinale (common watercress), Nasturtium sylvestre, Rorippa amphibia (wild watercress), Taraxacum dens leonis (dandelion leaves), Valerianella olitoria (lamb's lettuce), and Mentha viridis (spearmint) were reported as a source of human infections. In the Northern Bolivian Altiplano, some authors suggested that several aquatic plants such as bero-bero (watercress), algas (algae), kjosco and tortora could act as a source of infection for humans. Because F. Hepatica cercariae also encyst on water surface, humans can be infected by drinking of fresh untreated water containing cercariae.In addition, an experimental study suggested that humans consuming raw liver dishes from fresh livers infected with juvenile flukes could become infected.

Intermediate hosts: Intermediate hosts of F. Hepatica are freshwater snails from family Lymnaeidae. Snails from family Planorbidae act as an intermediate host of F. Hepatica very occasionally.



2. EPIDEMIOLOGY

Human and animal fasciolosis occurs worldwide. While animal fasciolosis is distributed in countries with high cattle and sheep production, human fasciolosis occurs, excepting Western Europe, in developing countries. Fasciolosis occurs only in areas where suitable conditions for intermediate hosts exist.[citation needed]

Studies carried out in recent years have shown human fasciolosis to be an important public health problem. Human fasciolosis has been reported from countries in Europe, America, Asia, Africa and Oceania. The incidence of human cases has been increasing in 51 countries of the five continents.A global analysis shows that the expected correlation between animal and human fasciolosis only appears at a basic level. High prevalences in humans are not necessarily found in areas where fasciolosis is a great veterinary problem. For instance, in South America, hyperendemics and mesoendemics are found in Bolivia and Peru where the veterinary problem is less important, while in countries such as Uruguay, Argentina and Chile, human fasciolosis is only sporadic or hypoendemic.

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