ASCP Parasitology Practice Exam (Sample)

Study Guide

Everything you need from our exam experts!

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Questions

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1. Which of the following is classified as a liver fluke?

- **A. Ascaris lumricoides**
- **B. Clonorchis sinenesis**
- **C. Trichiuris trichura**
- **D. Enterobius vermicularis**

2. Which parasitic organism is most commonly associated with massive hemolysis, blackwater fever, and central nervous system involvement?

- **A. Plasmodium vivax**
- **B. Plasmodium falciparum**
- **C. Leishmania donovani**
- **D. Trypanosoma brucei**

3. How does Cyclospora cayetanensis typically infect humans?

- **A. Contaminated water sources**
- **B. Contaminated animal products**
- **C. Insect bites**
- **D. Direct contact with infected individuals**

4. What happens to a parasite's morphology when holding blood too long before preparing thick and thin smears?

- **A. Increases clarity of stains**
- **B. Results in changes in parasite morphology**
- **C. Enhances parasite recognition**
- **D. Eliminates the need for a concentration step**

5. What is the causative agent of hydatid disease?

- **A. Toxocara canis**
- **B. Echinococcus granulosus**
- **C. Giardia lamblia**
- **D. Trichuris trichiura**

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6. In Taenia solium infection, how is the human host classified?

A. Definitive host

B. Accidental intermediate host

C. Intermediate host

D. Reservoir host

7. What is the infective form of microsporidia?

A. Free-living trophozoite

B. Resistant spore

C. Cyst form

D. Larval stage

8. How do trematodes differ from protozoa?

A. They are single-celled organisms

B. They are multicellular organisms

C. They do not have a complex life cycle

D. They are exclusively aquatic

9. During a waterborne outbreak of diarrheal disease, which organisms should be considered?

A. Giardia lamblia and Cryptosporidium species

B. Entamoeba histolytica and Naegleria fowleri

C. Trichinella spiralis and Ancylostoma duodenale

D. Schistosoma mansoni and Fasciola hepatica

10. Baermann's concentration is used specifically for the recovery of which organism?

A. Enterobius vermicularis

B. Strongyloides stercoralis

C. Wuchereria bancrofti

D. Dientamoeba fragilis

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Answers

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1. B
2. B
3. A
4. B
5. B
6. B
7. B
8. B
9. A
10. B

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Explanations

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1. Which of the following is classified as a liver fluke?

A. Ascaris lumricoides

B. Clonorchis sinenesis

C. Trichiuris trichura

D. Enterobius vermicularis

Clonorchis sinensis is classified as a liver fluke, specifically a type of parasitic flatworm known as a trematode. This organism primarily affects the liver and bile ducts of its hosts, particularly humans, and is transmitted through the consumption of undercooked freshwater fish that contain the larval stage of the fluke. Liver flukes are characterized by their flat, leaf-like shape and their life cycle involves several stages, including passes through snail hosts. Clonorchis sinensis can cause clonorchiasis, a condition associated with various gastrointestinal symptoms and potentially serious complications such as cholangitis or cholangiocarcinoma due to long-term infection. In contrast, the other choices pertain to different groups of parasitic organisms. Ascaris lumbricoides is a roundworm that causes ascariasis; Trichuris trichiura, also a roundworm, is responsible for whipworm infections; and Enterobius vermicularis is the pinworm that primarily infects the human intestinal tract. Each of these species has different anatomical characteristics, life cycles, and transmission routes, distinguishing them from liver flukes like Clonorchis sinensis.

2. Which parasitic organism is most commonly associated with massive hemolysis, blackwater fever, and central nervous system involvement?

A. Plasmodium vivax

B. Plasmodium falciparum

C. Leishmania donovani

D. Trypanosoma brucei

The correct answer is Plasmodium falciparum, which is recognized for its association with severe malaria symptoms, particularly massive hemolysis, blackwater fever, and central nervous system involvement. Plasmodium falciparum is known to cause the most severe form of malaria, leading to complications such as cerebral malaria, where the organism can invade and affect the central nervous system. Massive hemolysis occurs due to the rapid destruction of red blood cells as the parasites multiply within them, leading to an overwhelming immune response. Blackwater fever is a specific manifestation of severe malaria caused by Plasmodium falciparum and is characterized by dark urine as a result of hemoglobinuria, due to the breakdown of red blood cells and subsequent release of hemoglobin into the urine. This condition indicates significant hemolytic activity and is a critical sign of the severity of the infection. In contrast, Plasmodium vivax is generally associated with milder forms of malaria and is less likely to cause the extreme complications seen with falciparum infections. Leishmania donovani is known for causing visceral leishmaniasis, which primarily affects internal organs and is not associated with the specific symptoms of hemolysis or blackwater fever. Trypanos

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3. How does Cyclospora cayetanensis typically infect humans?

A. Contaminated water sources

B. Contaminated animal products

C. Insect bites

D. Direct contact with infected individuals

Cyclospora cayetanensis typically infects humans through the ingestion of food or water contaminated with the parasite's oocysts. Contaminated water sources are a primary route of transmission, especially when water is not adequately treated and is used for irrigation or when it's consumed directly. In many outbreaks, it has been shown that fresh produce, like berries and salad greens, can be contaminated through the use of contaminated water during irrigation or washing. This mode of transmission is particularly concerning in regions where sanitation practices may be inadequate, allowing the parasite to thrive and spread through unclean water. The oocysts are hardy and can survive in the environment for extended periods, which increases the likelihood of contamination. Other potential routes of infection, such as contaminated animal products, insect bites, or direct contact with infected individuals, do not play a significant role in the transmission of Cyclospora. Hence, contaminated water sources are recognized as the main vector for the infection in humans.

4. What happens to a parasite's morphology when holding blood too long before preparing thick and thin smears?

A. Increases clarity of stains

B. Results in changes in parasite morphology

C. Enhances parasite recognition

D. Eliminates the need for a concentration step

When a blood specimen is held for an extended period before preparing thick and thin smears, the morphology of the parasites can undergo significant changes. This occurs because prolonged storage can lead to alterations in the cellular structure and appearance of the parasites. Factors such as changes in osmotic pressure, degradation of cellular components, and alterations in the surrounding medium can cause parasites to appear distorted, vacuolated, or otherwise uncharacteristic. These changes can complicate identification and differentiation of the parasites, which is crucial in parasitology diagnostics, as accurate morphology is essential for proper identification and assessment of the species involved. Recognizing these morphological changes is essential for laboratory personnel, as it underscores the importance of timely processing of samples to ensure that diagnostic results are reliable and accurate.

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5. What is the causative agent of hydatid disease?

A. Toxocara canis

B. Echinococcus granulosus

C. Giardia lamblia

D. Trichuris trichiura

The causative agent of hydatid disease is Echinococcus granulosus, a type of tapeworm. This parasite is primarily found in the intestines of canines, such as dogs, which serve as the definitive hosts. The infection occurs when humans accidentally ingest Echinococcus eggs, typically through contaminated food or water, or through direct contact with feces from infected animals. Once inside the human host, the eggs hatch, and the larvae penetrate the intestinal wall, migrating to various organs, most commonly the liver and lungs, where they develop into hydatid cysts. These cysts can grow over time, leading to serious health complications, including pain, anaphylactic reactions, and the potential for rupture, which can cause severe allergic reactions due to the release of cystic fluid into the body. In contrast, the other organisms listed are not responsible for hydatid disease. Toxocara canis is associated with toxocariasis, primarily affecting the eyes and central nervous system. Giardia lamblia causes giardiasis, a gastrointestinal infection resulting in severe diarrhea and cramps. Trichuris trichiura, commonly known as the whipworm, is linked to intestinal infections but does not cause hydatid disease. Therefore, Echinococcus

6. In Taenia solium infection, how is the human host classified?

A. Definitive host

B. Accidental intermediate host

C. Intermediate host

D. Reservoir host

In Taenia solium infection, the human host is classified as an accidental intermediate host. This classification is based on the life cycle of the parasite. Taenia solium, commonly known as the pork tapeworm, has a complex life cycle that includes both definitive hosts, where the adult form of the parasite matures, and intermediate hosts, where larval stages develop. In the case of Taenia solium, pigs are the definitive hosts, as they harbor the adult tapeworms in their intestines. Humans can become infected by ingesting larvae found in contaminated undercooked pork, leading to the presence of the larval form—cysticerci—in human tissues. In this scenario, humans serve as accidental intermediate hosts when the larvae develop in locations not intended for their normal lifecycle, such as human muscle or other tissues, resulting in a condition known as cysticercosis. This is different from the typical association where humans would serve as definitive hosts for a tapeworm, as they do for Taenia saginata, which has a different host relationship. Recognizing the role of humans in the lifecycle of Taenia solium as accidental intermediate hosts is crucial for understanding the pathology and transmission dynamics of the infection, particularly in

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7. What is the infective form of microsporidia?

A. Free-living trophozoite

B. Resistant spore

C. Cyst form

D. Larval stage

The infective form of microsporidia is the resistant spore. Microsporidia are obligate intracellular parasites that are commonly found in a variety of hosts, including mammals, birds, and fish. The spores are unique because they have a tough outer wall that protects them from environmental stresses and allows them to remain viable for extended periods outside a host. When the resistant spore enters a new host, it germinates and releases a polar filament that injects the infective spore's contents into the host's cells. This mechanism is crucial for the parasite's ability to establish an infection within the host's tissues. The lifecycle and survival of microsporidia rely heavily on this spore stage, not only for transmission between hosts but also for their resilience in harsh conditions. The other forms mentioned do not apply to microsporidia. They do not have a free-living trophozoite stage, nor do they form cysts or larval stages in their lifecycle. Instead, their lifecycle is predominantly characterized by the formation of these resistant spores, which are essential for their transmission and survival. Consequently, the identification of the resistant spore as the infective form highlights the unique biology of microsporidia and their mode of infection.

8. How do trematodes differ from protozoa?

A. They are single-celled organisms

B. They are multicellular organisms

C. They do not have a complex life cycle

D. They are exclusively aquatic

Trematodes, commonly known as flukes, are classified as multicellular organisms, which distinguishes them from protozoa, the latter being single-celled organisms. This fundamental difference in cellular organization is crucial in understanding their biology and life cycle. Trematodes possess tissues and organ systems, including a digestive system, excretory system, and reproductive organs, which enable them to carry out their life functions effectively as multicellular entities. In contrast, protozoa are characterized by their single-cell structure, which limits them to simpler functions carried out by one cell. This is a key factor in how these two groups interact with their environments and host organisms. Trematodes often exhibit complex life cycles that involve multiple hosts and developmental stages, which is another aspect that differentiates them from protozoa. While trematodes are indeed primarily found in aquatic environments, indicating a habitat preference, this characteristic alone is not sufficient to distinctly categorize them compared to protozoa, as both groups can inhabit a variety of environments. The complexity of the life cycle, the multicellular structure, and organ system arrangements are more defining traits that set trematodes apart from protozoa.

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A. Giardia lamblia and Cryptosporidium species

B. Entamoeba histolytica and Naegleria fowleri

C. Trichinella spiralis and Ancylostoma duodenale

D. Schistosoma mansoni and Fasciola hepatica

In the context of a waterborne outbreak of diarrheal disease, Giardia lamblia and Cryptosporidium species are the most relevant organisms to consider. Both of these protozoan parasites are commonly associated with water contamination and can result in gastrointestinal illness, including diarrhea. Giardia lamblia is a flagellated protozoan that causes giardiasis, characterized by acute or chronic diarrhea, often accompanied by abdominal cramping and bloating. The organism is typically spread through the ingestion of cysts found in fecally contaminated water. Outbreaks are common in areas where water treatment may be inadequate, or among populations exposed to untreated water sources, such as during camping or in areas with poor sanitation. Cryptosporidium species, particularly Cryptosporidium parvum, is another protozoan that can cause cryptosporidiosis, leading to watery diarrhea. Like Giardia, it is transmitted through contaminated water and is resistant to chlorine disinfection, making it a significant concern in waterborne outbreaks. Cryptosporidium is often highlighted in discussions of water safety due to its ability to survive in the environment and cause large scale outbreaks, particularly in recreational water settings such as swimming pools or lakes. Other organisms mentioned in the options, such as Entamo

10. Baermann's concentration is used specifically for the recovery of which organism?

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B. Strongyloides stercoralis

C. Wuchereria bancrofti

D. Dientamoeba fragilis

Baermann's concentration technique is specifically designed to recover larvae of certain helminths, particularly those that are motile in water. This method is particularly effective for the recovery of Strongyloides stercoralis, a parasitic roundworm known for its ability to cause strongyloidiasis. The technique involves placing a fecal sample in a container with water, allowing larvae present in the sample to swim out from the fecal material. The sample is then collected from the bottom of the container for microscopic examination. Strongyloides stercoralis larvae are typically found in the feces during an active infection, and this method enhances the likelihood of detecting these larvae due to their motile nature. In contrast, other choices represent organisms that are not effectively retrieved using Baermann's technique. For example, Enterobius vermicularis (the pinworm) is usually diagnosed using the tape test rather than a concentration method. Wuchereria bancrofti, a filarial worm, is typically collected through blood samples or other serological tests. Dientamoeba fragilis, a protozoan, is usually detected through direct examination of fecal samples or by using other concentration techniques suitable for protozoa, rather than Baermann's method

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