

Harr Parasitology Practice Test (Sample)

Study Guide



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SAMPLE

Questions

SAMPLE

- 1. A patient with sudden cardiac irregularities and amastigotes in myocardium most likely suffered from?**
 - A. Leishmaniasis with *Leishmania donovani***
 - B. Leishmaniasis with *Leishmania braziliense***
 - C. Trypanosomiasis with *Trypanosoma gambiense***
 - D. Trypanosomiasis with *Trypanosoma cruzi***
- 2. What are the key characteristics of infection with *Plasmodium knowlesi*?**
 - A. Rapid erythrocytic cycle, infects all ages of RBCs, and can cause serious disease**
 - B. Erythrocytic cycle limited to young RBCs and causes benign disease**
 - C. True relapse from the liver and infection in older RBCs**
 - D. Extended life cycle, infects all ages of RBCs, similar to *P. ovale* disease**
- 3. What is the primary host for *Plasmodium vivax*?**
 - A. Dogs**
 - B. Humans**
 - C. Rats**
 - D. Cows**
- 4. Which organisms should be considered in a waterborne outbreak of diarrheal disease?**
 - A. *Giardia lamblia* and *Cryptosporidium* spp.**
 - B. *Endolimax nana* and *Entamoeba histolytica***
 - C. *Blastocystis hominis* and *Trichomonas vaginalis***
 - D. *Toxoplasma gondii* and *Schistosoma mansoni***
- 5. A Gram stain from a gum lesion showed amoebae. What is the correct identification from a trichrome smear showing amoebae with a single nucleus?**
 - A. *Trichomonas tenax***
 - B. *Entamoeba histolytica*/E. *dispar***
 - C. *Entamoeba gingivalis***
 - D. *Entamoeba polecki***

- 6. What is the best technique to identify *Dientamoeba fragilis* in stool?**
- A. Formalin concentrate**
 - B. Trichrome-stained smear**
 - C. Modified acid-fast-stained smear**
 - D. Giemsa's stain**
- 7. What is the typical host for *Echinococcus granulosus*?**
- A. Cats**
 - B. Humans**
 - C. Dogs**
 - D. Cattle**
- 8. Which organism is detected by the presence of eggs in a stool sample and is commonly associated with poor hygiene?**
- A. *Giardia lamblia***
 - B. *Enterobius vermicularis***
 - C. Aspartame**
 - D. *Ascaris lumbricoides***
- 9. Which specimen is least likely to provide recovery of *Trichomonas vaginalis*?**
- A. Urine**
 - B. Urethral discharge**
 - C. Vaginal discharge**
 - D. Feces**
- 10. What is a characteristic symptom of schistosomiasis?**
- A. Skin rash**
 - B. Bloody urine**
 - C. Persistent cough**
 - D. Shock**

Answers

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

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Explanations

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1. A patient with sudden cardiac irregularities and amastigotes in myocardium most likely suffered from?

- A. Leishmaniasis with *Leishmania donovani***
- B. Leishmaniasis with *Leishmania braziliense***
- C. Trypanosomiasis with *Trypanosoma gambiense***
- D. Trypanosomiasis with *Trypanosoma cruzi***

The presence of sudden cardiac irregularities alongside amastigotes found in the myocardium strongly indicates the involvement of *Trypanosoma cruzi*, the causative agent of Chagas disease. This parasitic infection is notable for its acute and chronic phases, where damage to cardiac tissue can lead to severe arrhythmias and other cardiac complications. In Chagas disease, the amastigotes typically form pseudocysts within the heart muscle, leading to myocarditis. This can result in symptoms such as palpitations, irregular heart rhythms, and even heart failure as the disease progresses. The identification of these intracellular forms in the myocardium is a key diagnostic feature that helps differentiate Chagas disease from other parasitic infections. While other options mention *Leishmania* and *Trypanosoma* species, they do not align with the symptoms presented. *Leishmaniasis* primarily affects the skin, liver, and spleen, not the myocardium, and it's caused by different *Leishmania* species, none of which are associated with cardiac irregularities in this manner. On the other hand, *Trypanosoma gambiense* is implicated in African sleeping sickness and does not involve amastigotes in the myocardium or cause the related cardiac symptoms seen in Chagas disease.

2. What are the key characteristics of infection with *Plasmodium knowlesi*?

- A. Rapid erythrocytic cycle, infects all ages of RBCs, and can cause serious disease**
- B. Erythrocytic cycle limited to young RBCs and causes benign disease**
- C. True relapse from the liver and infection in older RBCs**
- D. Extended life cycle, infects all ages of RBCs, similar to *P. ovale* disease**

Infection with *Plasmodium knowlesi* is characterized by a rapid erythrocytic cycle and the ability to infect all ages of red blood cells (RBCs), which sets it apart from some other *Plasmodium* species. This aspect is crucial because the rapid replication within RBCs leads to high parasitemia and can result in severe disease manifestations in infected individuals. *P. knowlesi* is known to cause complications similar to those seen in infections with *Plasmodium falciparum*, which is associated with more severe forms of malaria. The ability to infect all ages of RBCs also enhances the parasite's capability to establish and maintain an infection, as it is not restricted to a specific stage of red blood cell development. This broad range of susceptibility contributes to the overall virulence and clinical relevance of *P. knowlesi*. Moreover, the serious disease that can result from *P. knowlesi* infections highlights the public health importance of this species, particularly in areas where it is endemic. Understanding these characteristics is essential for diagnosing and treating malaria caused by *P. knowlesi* effectively.

3. What is the primary host for *Plasmodium vivax*?

- A. Dogs
- B. Humans**
- C. Rats
- D. Cows

Plasmodium vivax is a protozoan parasite known to cause malaria in humans. It has a complex life cycle that requires a definitive host for sexual reproduction and an intermediate host for asexual reproduction. Humans serve as the primary host, where the parasite undergoes its asexual development in the liver and red blood cells. The transmission typically occurs through the bite of an infected female *Anopheles* mosquito, which is the vector that aids in the parasite's lifecycle. In contrast, the other options do not serve as primary hosts for *P. vivax*. Dogs, for instance, are not involved in the life cycle of *P. vivax*, nor are rats or cows. Hence, the correct answer highlights the critical role of humans in the transmission and propagation of this malaria-causing parasite. Understanding the host dynamics is crucial for developing effective control strategies against malaria.

4. Which organisms should be considered in a waterborne outbreak of diarrheal disease?

- A. *Giardia lamblia* and *Cryptosporidium* spp.**
- B. *Endolimax nana* and *Entamoeba histolytica*
- C. *Blastocystis hominis* and *Trichomonas vaginalis*
- D. *Toxoplasma gondii* and *Schistosoma mansoni*

In the context of a waterborne outbreak of diarrheal disease, *Giardia lamblia* and *Cryptosporidium* spp. are the most relevant organisms. Both of these protozoan parasites are well-documented causes of gastrointestinal illness that can be spread through contaminated water sources. *Giardia lamblia*, commonly known as giardiasis, infects the intestines and leads to symptoms such as diarrhea, abdominal pain, and bloating. It is known to be resistant to typical disinfection methods used in water treatment, allowing it to persist in contaminated water supplies. *Cryptosporidium* spp. is another important waterborne pathogen that causes cryptosporidiosis. It also results in diarrhea and can persist in water systems due to its hardy oocyst form, which can withstand chlorine disinfection. The outbreaks associated with these two pathogens are often linked to drinking water contamination or recreational water activities. In comparison, while *Entamoeba histolytica* is a pathogenic amoeba that can cause dysentery and is transmitted fecal-orally, it is less commonly associated with waterborne outbreaks than *Giardia* and *Cryptosporidium*. *Endolimax nana* is a non-pathogenic amoeba and does not cause diarrhea. The other organisms mentioned, such as *Blastocyst*

5. A Gram stain from a gum lesion showed amoebae. What is the correct identification from a trichrome smear showing amoebae with a single nucleus?

- A. *Trichomonas tenax*
- B. *Entamoeba histolytica*/E. *dispar*
- C. Entamoeba gingivalis**
- D. *Entamoeba polecki*

The presence of amoebae with a single nucleus found in a trichrome smear from a gum lesion aligns with the characteristics of *Entamoeba gingivalis*. This particular amoeba is often associated with oral lesions and can be present in the subgingival plaque or gingival tissues. *Entamoeba gingivalis* is distinguished by its morphology, specifically having a single nucleus and being able to form trophozoites that are typically seen in the oral cavity. Its presence is often indicative of periodontal disease, highlighting the connection between oral health and parasitology. In the context of the other choices, *Trichomonas tenax*, while also found in the oral cavity, is a flagellate and not an amoeba, which eliminates it as a possibility. *Entamoeba histolytica* and *Entamoeba dispar* are important for their role in intestinal disease and are typically identified in stool samples rather than from oral lesions. *Entamoeba polecki* primarily affects swine and is not commonly associated with human oral conditions. Therefore, the identification of only a single nucleus within amoebae in the context of a gum lesion strongly supports the classification as *Entamoeba gingivalis*.

6. What is the best technique to identify *Dientamoeba fragilis* in stool?

- A. Formalin concentrate
- B. Trichrome-stained smear**
- C. Modified acid-fast-stained smear
- D. Giemsa's stain

Dientamoeba fragilis is a protozoan parasite that can be identified in stool specimens through specific staining techniques that highlight its presence effectively. The trichrome stain is particularly advantageous as it allows for the visualization of the organism's morphology, which includes its distinctive trophozoites and nuclei. Trichrome staining enhances the contrast between the parasite and the surrounding stool matrix, making it easier to identify *D. fragilis*. This method provides clear visualization of the cellular structure, which is crucial for proper identification. The use of other techniques, such as formalin concentration, while helpful for concentrating and identifying a variety of parasites, does not offer the same level of clarity for *D. fragilis* specifically. Other stains, like modified acid-fast and Giemsa's stain, are primarily used for different types of organisms or specific circumstances that do not align with the characteristics of *D. fragilis*. Thus, the trichrome-stained smear is the optimal choice for accurately detecting this particular protozoan in stool samples.

7. What is the typical host for Echinococcus granulosus?

- A. Cats
- B. Humans
- C. Dogs**
- D. Cattle

Echinococcus granulosus is a tapeworm that typically resides in the intestines of canids, with dogs being the primary definitive hosts. The life cycle of Echinococcus granulosus involves dogs or other canids consuming the organs of infected intermediate hosts, such as sheep, cattle, or humans, where forms of the parasite develop into cysts. Humans can act as intermediate hosts accidentally, often through the ingestion of eggs from contaminated sources. Therefore, dogs play a crucial role in the transmission cycle of Echinococcus granulosus, making them the typical host in which the adult parasite resides.

8. Which organism is detected by the presence of eggs in a stool sample and is commonly associated with poor hygiene?

- A. Giardia lamblia
- B. Enterobius vermicularis**
- C. Aspartame
- D. Ascaris lumbricoides

The detection of eggs in a stool sample is characteristic of Enterobius vermicularis, also known as the pinworm. This organism is particularly associated with poor hygiene practices, such as inadequate handwashing, which facilitates its transmission. Enterobius vermicularis lays its eggs around the anal area, and these can be transferred to fingers and surfaces, leading to further infections. The eggs are tiny and can easily be spread in environments where sanitation is lacking, particularly in settings with close contact among individuals, such as households or schools. While other organisms like Giardia lamblia and Ascaris lumbricoides may also be related to hygiene, they are identified through different means. Giardia lamblia typically requires a stool sample analysis for cysts rather than eggs, while Ascaris lumbricoides eggs can be detected in stool but are associated with different transmission routes and often in contexts involving contaminated food or soil rather than direct person-to-person transmission linked to hygiene. The choice of Enterobius vermicularis thus best fits the criteria of being detected by eggs in stool and linked to poor hygiene.

9. Which specimen is least likely to provide recovery of *Trichomonas vaginalis*?

- A. Urine**
- B. Urethral discharge**
- C. Vaginal discharge**
- D. Feces**

Trichomonas vaginalis is a protozoan parasite primarily associated with sexually transmitted infections and is typically found in the urogenital tract. When diagnosing infections caused by this pathogen, the type of specimen collected can significantly influence the likelihood of detecting the organism. Feces are least likely to provide recovery of *Trichomonas vaginalis* because this parasite is primarily transmitted through sexual contact and colonizes the vaginal or urethral areas rather than the gastrointestinal tract. *Trichomonas vaginalis* is not naturally found in fecal matter, making it an inappropriate specimen for diagnosing infections caused by this organism. In contrast, urine, urethral discharge, and vaginal discharge are all viable specimens for recovery, as they can contain the protozoan, allowing for better identification and diagnosis of an infection. Understanding the natural habitat of *Trichomonas vaginalis* helps clarify why feces are not a suitable specimen in this context.

10. What is a characteristic symptom of schistosomiasis?

- A. Skin rash**
- B. Bloody urine**
- C. Persistent cough**
- D. Shock**

A characteristic symptom of schistosomiasis is bloody urine, which is primarily associated with the urinary form of the disease, often caused by *Schistosoma haematobium* infection. This symptom results from the presence of adult schistosomes in the blood vessels surrounding the bladder. When these parasites deposit eggs in the tissue, they can cause irritation and inflammation, leading to hematuria, or blood in the urine. The presence of bloody urine can be a significant indicator for clinicians when diagnosing schistosomiasis, especially in endemic areas. Blood in urine is typically observed when the disease has progressed and is part of a range of symptoms including urinary tract symptoms and abdominal pain. In contrast, while skin rash, persistent cough, and shock can be associated with various other conditions or could theoretically occur in different stages of schistosomiasis or due to secondary infections, they are not characteristic symptoms specifically associated with schistosomiasis. Understanding these clinical presentations is vital for appropriate diagnosis and management of the disease.