

## Parasitic Diseases as Differential Diagnosis in the Field of Hematology

### Hematoloji Alanında Ayırıcı Tanı Olarak Parazitik Hastalıklar

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Aplastic anemia (AA) refers to pancytopenia due to fat replacement of the bone marrow and the inability to generate blood cells. Its causes can be congenital and acquired. Fanconi anemia is the well-known congenital AA cause. Besides this, toxins, viruses, immune dysfunction, and infections may cause AA. *Leishmania* species are parasitic protozoa transmitted by infected female sand flies. Diseases caused by *Leishmania* parasites are referred to as leishmaniasis. Leishmaniasis is seen in tropical and subtropical areas, mainly in the Middle East, Indian subcontinent, and Northern and Eastern Africa. Visceral leishmaniasis, also known as kala-azar, can mimic hematological diseases. Clinico-hematological features might include thrombocytopenia, anemia, leucopenia, splenomegaly, and/or hepatomegaly (1). Visceral leishmaniasis may also mimic hematological malignancies, and clinically suspicious patients having cytopenia, fever, and splenomegaly must be analyzed by at least one serological test specific for leishmaniasis. Samples obtained from the bone marrow of suspected patients must also be parasitologically evaluated for the presence of amastigotes.

Malaria causes paroxysmal fever and anemia. *Plasmodium* parasites are transmitted via infected female mosquito bites. There are several species of *Plasmodium* parasites that are pathogenic to humans. *Plasmodium falciparum* is a species that can cause cerebral symptoms. In underdeveloped regions such as sub-Saharan tropical Africa, malaria should be one of the primary differential diagnoses in case of anemia and fever. In contrast, in developed countries, malaria should be kept in mind in case of anemia and fever. Microscopic examination of peripheral blood smears can help in making a differential diagnosis in clinically suspected cases.

Babesiosis is a tick-borne disease caused by *Babesia* parasites. Its symptoms are similar to those in malaria because both cause fever and hemolytic anemia (2). Visualizing parasites on a Giemsa-stained thin film of the peripheral blood smear would be diagnostic. On microscopic examination, distinguishing *Babesia* parasites from *Plasmodium* parasites is important, but this might not be always possible. Serological and/or molecular tests could also help to diagnose babesiosis in case of clinical suspicion (3, 4). Babesiosis should be kept in mind for patients who had travelled to endemic areas in the last few months and who present with fever and hemolytic anemia. For treatment, clindamycin and oral quinine can be used.

Schistosomiasis is another common parasitic disease in tropical regions. *Schistosoma mansoni* is one of the main etiological agents of schistosomiasis. Infection with *S. mansoni* can also cause hepatomegaly, splenomegaly, fever, and/or anemia (5). Serological methods and microscopic examination of the stools can help make the correct diagnosis. *S. mansoni* infection should be kept in mind in the differential diagnosis of patients with hepatosplenomegaly, fever, and/or anemia, particularly in those who had travelled to endemic-countries.

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