



# Blood parasite infections in kidney transplant recipients; an important issue in tropical medicine

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## Abstract

Blood parasite infection is an important issue in infectious medicine. In tropical medicine, there are several important blood parasite infections. The kidney transplant recipients might get blood parasite infections. In this article, the authors review and summarize important blood parasite infections among kidney transplant recipients.

**Keywords:** Kidney, Transplant, Parasite, Infection

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## Introduction

Blood parasite infection is an important issue in infectious medicine. In tropical medicine, there are several important blood parasite infections including blood helminthiasis and blood protozoa infection. The kidney transplant recipients might get blood parasite infections.

## Objectives

In this article, the authors review and summarize important blood parasite infections among kidney transplant recipients.

## Some important blood parasite infection in kidney transplant patients

### Blood helminthiasis

#### *Schistosomiasis*

Schistosomiasis or blood fluke infection is an important helminthiasis seen in several countries. In Egypt where the disease is highly endemic, there are some reports on schistosomiasis in kidney transplant recipients. In the case series reported by Sobh et al (1), *Schistosoma mansoni* is the leading species causing the infection followed by mixed infection and *Schistosoma haematobium* (1). In the report by Sobh et al, the infection is not related with the graft rejection and the treatment of infection does not affect the function of graft (1). The infection might induce some uncommon clinical problems such as colitis (2) and stricture of the urethra (3).

### *Filariasis*

Filariasis is another important tropical helminthiasis. The parasite infection usually affects the blood lymphatic system of the patients and the well-known infectious disease induced condition, elephantiasis is due to filariasis. In endemic area, filariasis might be seen in renal transplant recipients and is also observable as an infection in dead renal transplant recipient (4). The common clinical presentation of filariasis in kidney transplant recipient is chyluria (5). Sometimes, the infection might result in lymphocele and can deteriorate the graft function (6).

### Blood protozoa infection

#### *Malaria*

Malaria is caused by protozoa infection. The pathogen is the pathogenic *Plasmodium* species. Malaria in kidney recipients has been sporadically reported for a long time. Transfusion is an important mean that causes the infection in renal transplant patients and it is an important issue in transfusion medicine at present (7). The patient might present with renal failure and intravascular hemolysis and the prompt antimalarial treatment is required (8). The main presenting clinical problem is fever (7-10). The clinical presentation might be several weeks after acquired transplantation related malaria (9). Several *Plasmodium* species can be found as a pathogen (7-10). In some cases, mix species infection is also observable (9).

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### ■ Implication for health policy/practice/research/medical education

Blood parasite infection is an important issue in infectious medicine. In tropical medicine, there are several important blood parasite infections.

#### *Babesiosis*

*Babesia* is another important tropical blood protozoa infection. Similar to malaria, the blood transfusion is reported as a possible cause of babesiosis in renal transplant recipient (11).

#### *Leishmaniasis*

Leishmaniasis is another important tropical blood protozoa infection. Similar to malaria and babesiosis, the blood transfusion is reported as a possible cause of leishmaniasis in renal transplant recipient (12). The main clinical presentation is fever and lymphadenopathy (12-14). Parasitic nephritis is observable in some cases (14). In a report from Spain, the seroprevalence of leishmaniasis among renal transplant recipients is up to 4.8% indicating the importance of this disease (16). Liposomal amphotericin B is proven effective in the treatment of infection (14,15).

#### *Toxoplasmosis*

Toxoplasmosis is another important blood protozoa infection. The infection is related to cat and known as cat borne zoonosis. In a report, the seroprevalence of toxoplasmosis among renal transplant recipients is up to 11% indicating the importance of this disease (16). In serious case, ocular and neurological presentations of toxoplasmosis are observable (17-20). The standard treatment for toxoplasmosis is applicable for the renal recipient cases (18).

#### *Trypanosomiasis*

Trypanosomiasis is another important blood protozoa infection. The infection in renal transplant patients is also reported in medical literature. The neurological involvement is observable in serious case (21). The standard treatment for trypanosomiasis is applicable for the renal recipient cases (22).

### Conclusion

As already mentioned, there are several important blood parasite infections among kidney transplant recipients. Important concepts for management of blood parasite infections among kidney transplant recipient include primary and secondary preventions. For primary prevention, the screening of both donor and recipient is needed. Not only the organ but also blood and blood products require complete screening to confirm no existence of blood pathogens. In several cases, the infection is due to reactivation of the old occult infection in renal

transplant recipient and this implies the importance of complete screening for kidney transplant recipient. For secondary prevention, early diagnosis and prompt treatment of problem is required. The disease might occur at any period after the transplantation. The disease might be the result of transplantation-related infection or post-transplantation. The practitioner should recognize the possibility of blood parasite infection among the renal transplant recipients presenting with unexplained clinical problems, especially for fever. Simple investigation should include the blood smear examination, which is the basic way to detect blood parasite but usually forgotten in clinical practice. For any identified infection, the use of standard infection therapy is usually effective, similar to the therapy in general population.

#### Authors' contribution

Both authors wrote the manuscript equally.

#### Conflicts of interest

The authors declared no competing interests.

#### Ethical considerations

Ethical issues (including plagiarism, data fabrication, double publication) have been completely observed by the authors.

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