Successful Treatment of *Strongyloides stercoralis* Hyperinfection in a Kidney Transplant Recipient: Case Report

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ABSTRACT

Strongyloides stercoralis (SS) can cause hyperinfection and disseminated infection in immunosuppressed individuals, with risk of mortality. We report the case of a cadaveric kidney transplant recipient who developed gastrointestinal symptoms and eosinophilia, approximately 3 months after transplantation. Stool examination and esophagogastroduodenoscopy with biopsies were positive for SS larvae. The patient was started on oral ivermectin and immunosuppression was reduced, but still the clinical picture got worse with metabolic ileus and respiratory symptoms, with the need for administration of subcutaneous ivermectin and combined therapy with albendazol. The patient survived and graft function was preserved. The patient was unlikely to be the source of infection. We also present a review of cases of SS infection in kidney transplant recipients.

STRONGYLOIDES stercoralis (SS) is a nematode, endemic of tropical and subtropical climates [1]. It can occur sporadically in temperate areas [2]. It penetrates the skin when there is contact with contaminated soils. Inside the human host, the larvae replicate and reach maturity in the small intestine, enter circulation, invade the airways and again reach the gastrointestinal system. Larvae eliminated in stool can penetrate perianal skin and re-enter the cycle. Autoinfection is responsible for the persistence of larvae for decades inside the host [3,4] and appears to be regulated by host immunity [3].

In an immunocompetent host, SS infection is often asymptomatic or can cause mild gastrointestinal, cutaneous, or respiratory symptoms; eosinophilia is not always present [1]. The immunocompromised hosts, particularly those on steroids [3], are at risk for hyperinfection syndrome (accelerated auto-infective cycle with rapid multiplication) or disseminated infection (systemic larval dissemination), with mortality rates as high as 80% [1,3,5,6]. Enteric bacteremia and septicemia are serious complications associated with Strongyloidiasis and often lead to poorer outcomes [2,6–8].

In transplant recipients, transmission of SS through the allograft is becoming increasingly frequent [1,4,5]. Donor transmission is still poorly understood and previous dissemination of parasites in an infected donor may be required [4], for instance, if they are preconditioned with corticosteroids [4,6].

We report the case of a cadaveric kidney transplant recipient with SS infection that was successfully treated. Both patient and allograft survived. We also present a review of the literature of SS infection in kidney transplant recipients. We used http://www.pubmed.com as the database and searched for case reports published between January 2010 and June 2017. Cases are presented in Table 1, in ascending order of issue year of publication, and information is provided on patient's age and gender, timing to onset of disease after transplantation, ongoing maintenance immunosuppression when disease manifested, organ system of first symptoms, presence or absence of eosinophilia when disease manifested, means used for diagnosing SS infection, source of infection (if known or probable), anti-SS treatment, alterations on ongoing immunosuppression after diagnosis, and patient outcome.

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Table 1. Review of Cases of SS Infection in Kidney Transplant Recipients (Organized in Ascending Order of Issue Year of Publication)

Issue Year	First Author	Pt Age	Pt Gender	Timing to Onset (mo)	Maintenance Immunosuppression	First Symptoms	Eosinophilia	Means to Diagnosis	Source of Infection	Anti-Strongyloides Treatment (Dose, Route, Duration)	Alteration on Ongoing Immunosuppression	Pt Outcome
2010	Weiser	68	m	3	NS	GI+R+C	NS	Gastric aspirate, skin BX, bronchial aspirate, bronchoalveolar lavage	Donor (!)	Albendazole (400 mg 2id, rectal, NS) followed by albendazole (400 mg 2id, PO and rectal, NS) plus ivermectin (200 μg/kg id, PO, NS) followed by ivermectin (200 μg/kg a.d., SC, NS)	All stopped	Died
2011	Briasoulis[†]	44	f	1	SRL+PDN	GI	No	Stool	NS	Ivermectin (200 mg/kg id, PO, 2 d) followed 2 wk later by ivermectin (200 mg/kg id, PO, 2 d)	NS	Lived
2011	Hamilton	39	f	2.5	TAC+MMF+PDN	GI	No	Skin BX, stool	Donor (!)	Ivermectin (200 μg/kg id, PO, 5 d) followed by ivermectin (NS, rectal, NS) and ivermectin (200 μg/kg a.d., SC, 11 d) followed by ivermectin PO (200 μg/kg id, PO, 14 d)	NS	Lived
2011	Hamilton	53	f	NS	TAC+MMF+PDN	GI	No	Gastric aspirate, bronchial aspirate	Donor (!) C	Ivermectin (200 μg/kg id, PO, 26 days + another 7 d)	NS	Lived
2012	Arango*	29	f	4	TAC+MMF+PDN	GI+Resp	Yes	Bronchoalveolar lavage	NS	Ivermectin (NS, NS, NS)	NS	Died
2012	Ferreira	50	m	4	TAC+MMF+PDN	R	No	Sputum	Donor unlikely	Ivermectin (200 μg/kg id, PO, 10 d)	All stopped	Died
2013	Donadello	56	m	96	NS	GI	NS	Stool, abdominal drainage	NS	Ivermectin (75 μg/kg id, SC, 5 d) followed by ivermectin (200 μg/kg id, SC, 9 d) then stopped due to suspected neurotoxicity	NS	Died