Zoonotic infectious diseases in transplanted immunocompromised patients

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Blanda V[1], Mularoni A[2], Luca A[2], Bruno F[1], Castelli G[1], Vitale F[1], D'Agostino R[1], Grippi F[1], Torina A[1]

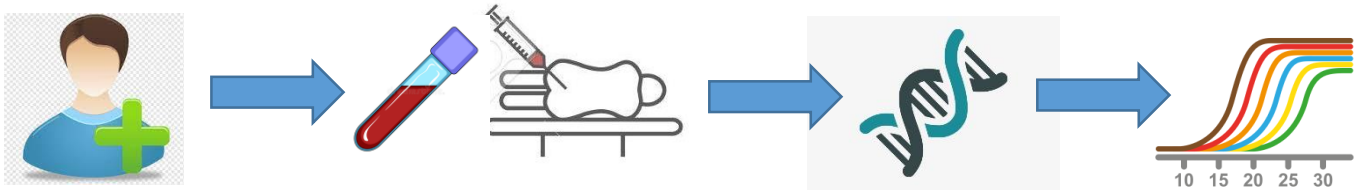
[1] Istituto Zooprofilattico Sperimentale della Sicilia, Palermo, Italy; [2] IRCCS-ISMETT, Palermo, Italy.

Background. Immunocompromised patients, like transplant recipients, are a particularly vulnerable group being at higher risk of developing several infectious diseases. Among them, zoonotic diseases, such as visceral leishmaniasis, bartonellosis, Q fever and leptospirosis are a growing concern in immunosuppressed patients as they are more susceptible to develop severe symptoms of the diseases.

Objectives

The study aimed at the detection of *Leishmania infantum*, *Bartonella* spp., *Leptospira* spp. and *Coxiella burnetii* DNA in immunocompromised hosts through molecular methods.

Material and Methods



Fifty-eight transplanted with suspected zoonotic infections hospitalized at ISMETT from 2016 to 2021.

EDTA blood or tissue biopsy

Genomic DNA extraction using commercial kits

Molecular analysis on the basis of clinical suspicion

Pathogen	Method	Molecular target	Ref.
L. infantum	Taqman RT-PCR	Kinetoplast DNA	1
Bartonella spp.	PCR	*16S-23S rRNA ITS*	2
Bartonella spp.	SYBR Green RT-PCR	16S-23S rRNA *ITS*	3
C. burnetii	PCR	*htpB*	4
C. burnetii	TaqMan RT-PCR	*IS1111*	5
Leptospira spp.	TaqMan RT-PCR	*16S rDNA*, *lipL32*	6

Results

Overall, out of the 58 transplanted patients subjected to analysis for different zoonotic agents following clinical suspicion, 10 (18,2 %) were positive for one of the examined pathogens.

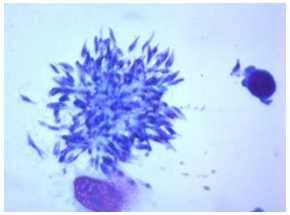


Figure 1. *Leishmania* culture obtained from bone marrow aspirate from a patient positive for visceral leishmaniasis

Figure 1.

	L. infantum	***Bartonella* spp.**	***C. burnetii***	***Leptospira* spp.**
Examined pathogens	42	12	3	1
Positive results	5	4	1	0

Conclusion. A correlation between immunosuppression and susceptibility to infectious zoonotic diseases emerged and immunosuppression due to a transplant may predispose patients to these infectious agents. Diagnosis of zoonotic diseases should be thus considered in the differential diagnosis of transplant recipients and may be useful in the management of these patients.

References: 1) Castelli et al., Pathogens 2021, 10, 865 ; 2) Diniz et al., Vet Res. 2007;38(5):697-710; 3) Valtierra et al., Rev Esp Salud Publica. 2016; 90:E5; 4) To et al., J Clin Microbiol. 1996; 34 (3):647-51.; 5) Schets et al., Int J Hyg Environ Health. 2013; 216(6):698-702.; 6) Stoddard et al., Diagn Microbiol Infect Dis. 2009; 64(3):247-55.

Presenting author: Valeria Blanda valeria.blanda@izssicilia.it
Istituto Zooprofilattico Sperimentale della Sicilia, Via Gino Marinuzzi, 3
90129 Palermo, Italy,