Molecular tools for understanding *Trypanosoma cruzi* reactivation and follow up during tripanocidal treatment in HIV coinfected patients

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Chagas disease reactivation is an AIDS defined illness. Standard *T. cruzi* reactivation diagnosis is based on direct observation methods. This diagnosis is usually belated and it is supposed to be a reason for bad prognosis on this opportunistic infection.

We included 3 patients with diagnosis of HIV/AIDS disease (without antiretroviral treatment, CD4+ T cell count were 7-25 cel/mm$^3$), chronic *T. cruzi* infection, and neurological disorders. Real-Time PCRs against *T. cruzi* satellite DNA were carried out from cerebrospinal fluid (CSF) and peripheral blood samples (Bs) before the beginning of parasitological treatment (pTtm) and during follow up. Molecular characterization of parasites was based on amplification of nuclear sequences.

Two patients started pTtm after microscopical detection of trypomastigote forms in the CSF samples. The third one started empiric pTtm. CSF-based parasitic loads were higher (3.5, 4.3 log parasite-equivalents/ml) than those found in Bs of the respective patients (0.3, 2.09, 2.15 log p-e/ml) withdrawn at the same day. Parasite DNA in Bs (DNAemia) became undetectable in all patients from the 4th to 6th day of pTtm, remaining undetectable until patients death 20-40 days later. Interestingly, a CSF sample showed the highest parasitic load after 7 days of pTtm in the patient with bloodstream clearance at the 4th day onwards. The patient with the lowest DNAemia was the one with CSF negative findings.

Results suggest that DNAemia could be associated to CSF parasite colonization. CSF-based parasitic loads are higher than bloodstream ones. Moreover, during pTtm DNAemia turned negative but CSF-based parasitic load increased; this could be due to the drug difficulty to reach CNS, unknown drugs interactions with benznidazole, parasite tropism for CNS, or aggregating infections (*Criptococcus neoformans* in last patient). All characterized parasites belonged to V and/or VI *T. cruzi* Discrete Typing Units, frequently found in patients of this geographic region.

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