

## **Leptospirosis and coinfection: Should we be concerned?**

### **ABSTRACT**

Pathogenic *Leptospira* is the causative agent of leptospirosis, an emerging zoonotic disease affecting animals and humans worldwide. The risk of host infection following interaction with environmental sources depends on the ability of *Leptospira* to persist, survive, and infect the new host to continue the transmission chain. *Leptospira* may coexist with other pathogens, thus providing a suitable condition for the development of other pathogens, resulting in multi-pathogen infection in humans. Therefore, it is important to better understand the dynamics of transmission by these pathogens. We conducted Boolean searches of several databases, including Google Scholar, PubMed, SciELO, and ScienceDirect, to identify relevant published data on *Leptospira* and coinfection with other pathogenic bacteria. We review the role of the host-microbiota in determining the synanthropic interaction of *Leptospira* sp. with other bacteria, thus creating a suitable condition for the *leptospira* to survive and persist successfully. We also discuss the biotic and abiotic factors that amplify the viability of *Leptospira* in the environment. The coinfection of *leptospira* with pathogenic bacteria has rarely been reported, potentially contributing to a lack of awareness. Therefore, the occurrence of leptospirosis coinfection may complicate diagnosis, long-lasting examination, and mistreatment that could lead to mortality. Identifying the presence of leptospirosis with other bacteria through metagenomic analysis could reveal possible coinfection. In conclusion, the occurrence of leptospirosis with other diseases should be of concern and may depend on the success of the transmission and severity of individual infections. Medical practitioners may misdiagnose the presence of multiple infections and should be made aware of and receive adequate training on appropriate treatment for leptospirosis patients. Physicians could undertake a more targeted approach for leptospirosis diagnosis by considering other symptoms caused by the coinfecting bacteria; thus, more specific treatment could be given.