Abstract

Leptospirosis is a zoonosis of ubiquitous distribution caused by spirochetes. Leptospires exist either as saprophytic water-associated organisms or as animal pathogens that can survive in water. Previous works have demonstrated that both saprophytic and pathogenic leptospires are able to produce functional biofilms, which consist of a community of bacteria embedded in an extracellular matrix attached to a surface. This structure is believed to provide protection from environmental aggressiveness. In the present study, we analyzed the capacity of biofilm formation both of a recent field isolate of Leptospira interrogans serovar Pomona obtained from an aborted swine fetus and of the saprophytic Leptospira biflexa serovar Patoc. We used light microscopy, immunofluorescence, and scanning electron microscopic examinations on glass and polystyrene plate models to evaluate the process in vitro. The ability to form bacterial aggregations in vivo was tested using pregnant guinea pigs infected with both strains. We obtained biofilms both on glass and plastic surfaces. Scanning electron microscopic analysis showed differences in the biofilm structure formed by both strains. L. interrogans serovar Pomona cell aggregations were observed in placental tissues by light microscopy. Biofilms and cell aggregations are consistent with the life of saprophytic strains in water and could help pathogenic strains to colonize the host and lead to abortion in pregnant animals.

Keywords

Leptospira interrogans, biofilms, cell aggregations, guinea pigs.