Intracellular Survival of Burkholderia pseudomallei: A Possible Mechanism for Cell Spreading

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Melioidosis is a potentially fatal disease whose clinical outcomes include relapsing and delayed - onset infections. Like other facultative intracellular bacterial pathogens, Burkholderia pseudomallei are capable of survival in human phagocytic THP-1 cells. We investigated the pathogenesis of exposing B. pseudomallei to invade and survive in eukaryotic cells in a series of coculture experiments. Bacterial pathogenesis was observed in human macrophages. A more extensive range of cellular interactions including bacterial adhesion, incorporation into vacuoles, and separation was observed with B. pseudomallei in timed coculture experiments. THP-1 cells containing motile intravacuolar bacilli were found throughout 72 h of coculture. Electron microscopic visualization of B. pseudomallei - infected THP-1 polymorphonuclear leukocytes confirmed the presence of intracellular location of B. pseudomallei bacteria within membrane - bound vacuoles, additionally clusters of intact bacilli in membrane-lined vesicles inside the cytoplasm and multiple bacterium-laden vacuoles formed after 24 hours of coculture. The bacterium is known to spread and multiply inside the host THP-1 cells and may be able to spread directly from cell to cell. Human macrophage passage of B. pseudomallei proves further investigation as a potential in vitro model of intracellular infection.

doi:10.1016/j.ijid.2008.05.581

Quantifying Risk Factors for Human Brucellosis in Tanzania

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Setting: Arusha and Manyara regions, Tanzania.
Objective: To determine the risk factors for transmission of brucellosis to humans in Tanzania
Study design: A matched case-control study
Methodology: Any person with a positive result by competitive ELISA test (c-ELISA) for brucellosis, and presenting to the selected hospitals with at least two signs or symptoms suggestive of brucellosis such as headache, fever which is recurrent or continuous, sweating, joint pain, joint swelling, general body malaise or backache, was defined as a case. For every case in a district, a corresponding control was traced and matched by sex using multistage sampling. Other criteria for inclusion as a control included that the matched individual had a negative c-ELISA result and would present to hospital if sick. Using risk sets as a matching variable, and cases and controls as outcome variables, models were fitted to test their significance and the likelihood ratio was used to identify risk factors for human brucellosis.

Results: Brucellosis was found to be associated with assisting cattle, sheep or goat during abortion. The closer the distance between households, the higher was the risk of brucellosis. People belonging to one religion group were found to have a higher risk of brucellosis compared to others. No association was established between brucellosis serostatus in humans and brucellosis serostatus of their own livestock. In humans, there was no association between brucellosis serostatus and HIV serostatus.

Conclusion: Protecting humans against contact with fluids and tissues during assisted parturition of livestock may be an important means of reducing the risk of transferring brucellosis from livestock to humans. The possibility of contracting brucellosis from neighbours should also be considered. These can be achieved through health education to the communities where brucellosis is common. Interestingly there was no association between HIV serostatus and brucellosis serostatus, indicating that unlike other infectious diseases brucellosis is not more likely to occur in patients immune compromised by HIV in these areas.

doi:10.1016/j.ijid.2008.05.582

Duration of VRE (Vancomycin resistant enterococcus) Carriage and Clearance of VRE in Renal Patients

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Background: VRE colonization in renal patients poses formidable infection control challenges. There is a paucity of data on the duration of VRE carriage and when from an infection control viewpoint de-isolation can be endorsed. In Singapore General Hospital (SGH) VRE carriage...