

Showers may be linked to Crohn's disease say researchers

July 24 2014



Humans may be exposed to bacteria linked with Crohn's disease through fine spray from showers and rivers according to research led by Lancaster University.

Mycobacterium avium subspecies *paratuberculosis* (Map) is a bacterial pathogen that causes Johne's disease in animals, particularly cattle, and is significantly associated with Crohn's disease (CD) in humans, both chronic inflammatory conditions, mainly of the intestine.

This is the first study – published in *Pathogens* - to provide evidence that fine water spray from both domestic showers and rivers is an exposure route for the bacteria to humans and may play a role in the development of Crohn's Disease.

Professor Roger Pickup from Lancaster University's Faculty of Health and Medicine led the collaborative research partnership together with the NERC Centre for Ecology and Hydrology at Lancaster, Royal Lancaster Infirmary, Cardiff University and Kings College London.

The team examined domestic showers from different regions in the U.K. and detected Map in three out of 30 independent samples, providing a route for human exposure by fine water spray.

Professor Pickup said: "We recommend that in line with precautions against Legionnaires' Disease, that showers should be run for a short period before use, particularly those that have not been used for a while."

Previous studies by the same team have shown the Map bacteria to be present in UK rivers due to land deposition from chronic livestock infection and runoff driven by rainfall.

They also found Map bacteria in five aerosol samples collected above the River Taff in Wales.

The researchers said it was possible that the significant clusters of Crohn's Disease patients in Cardiff are, in part, due to inhalation of Map in fine water spray generated from the river and presented by the prevailing winds.

Inhalation has been shown as a route for the infection of cattle and lung involvement is well described in adults with Crohn's disease; the disease

in children often begins with a cough and a mild inflammation of the throat and lungs. Initial invasion via the oral route followed by Map's substantial tissue tropism for the gut may result in [chronic inflammation](#) of the intestine.

Although Map is difficult to detect in humans and even more difficult to culture, recent data has shown it to be significantly associated with Crohn's disease and, if appropriate tests are done correctly, that almost everyone with chronic inflammation of the gut of the Crohn's disease type is found to be infected with this chronic enteric pathogen.

More information: Rhodes, G., Richardson, H., Hermon-Taylor, J., Weightman, A., Higham, A. and Pickup R. (2014). "Mycobacterium avium Subspecies paratuberculosis: Human Exposure through Environmental and Domestic Aerosols." *Pathogens* 3(3): [DOI: 10.3390/pathogens3030577](#)

Provided by Lancaster University

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