MedicalXpress

Lymph nodes can be key in spreading prion infectivity

September 25 2007

Lymph nodes can be crucial for spreading low doses of infective prion agents -the pathogens responsible for conditions such as scrapie and Creutzfeldt-Jakob disease - into the nervous system, according to new research published in the online open access journal BMC Veterinary Research.

While we can show that the regional lymph node plays no pivotal role in the neuroinvasion of prions for high doses of infection, we cannot rule out the possibility that lymph nodes are still involved in the distribution of prions throughout the body to other non-neural tissues.

The research, carried out by scientists in the group of Michael Beekes at the Robert-Koch Institute in Berlin, Germany, sheds new light on the important issue of how prion agents are transmitted from the site of infection to the brain and spinal cord, where they cause irreparable and fatal damage.

Christine Kratzel and colleagues investigated the role of the lymphoreticular system - which comprises the network of lymph nodes that is part of the body's defence system - in the spread of scrapie infection to nerve tissue in hamsters. The team discovered that if a lymph node close to the site of infection is removed within six days after a high or a medium dose of infective agent has been administered, the animal still develops the disease. However, if the node is removed 4 weeks before infection, a high dose causes the disease while a low dose does not (over the course of the 314 day time period for the study). The

results suggest that for low doses of infective agent the lymphoreticular system is important in facilitating neuroinvasion i.e. the spread of prions from the infection site to the central nervous system.

The team also noted that after a node had been removed and the wound not yet healed, prion infection is substantially accelerated.

The findings are important because the role of the lymphoreticular system and inflammatory processes in the spread of prion infectivity through the body has been poorly understood. A clearer understanding of the factors involved in the transport of the agent in the body will help scientists and doctors to develop new ways of preventing and treating prion diseases.

Source: BioMed Central