BMC Proceedings

Introduction

Infectious diseases of the nervous system: pathogenesis and worldwide impact

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from Infectious diseases of the nervous system: pathogenesis and worldwide impact
Paris, France. 10–13 September 2008

Published: 23 September 2008

BMC Proceedings 2008, **2**(Suppl 1):I1

This article is available from: http://www.biomedcentral.com/1753-6561/2/S1/I1

While viral encephalitis and bacterial meningitis are actively being studied in the US and other developed countries, less attention is paid to often-fatal nervous system invasion caused by neurotropic viruses, parasites and mycobacteria that represent important health problems in tropical regions. The following examples are but a few indicating the profound impact of neurotropic infectious agents on neural cell functions. Because of the absence of HIV or malaria vaccines, tuberculosis meningitis and cerebral malaria take a heavy toll among children and, when they survive, may cause neurological sequels affecting motility, sensory organs and mental function. Although combined antiretroviral therapy has decreased the occurrence of AIDS dementia, HIV-associated neurocognitive disorders are still observed today in a substantial proportion of AIDS patients. In sub-Saharan Africa, Human African Trypanosomiasis (HAT), transmitted by tsetse flies, threatens millions of people and patients show profound disturbances of sleep cycles together with sensory signs and lack of coordination before going into coma and dying if untreated. *Mycobacterium leprae*, which invades nerves, causing sensory loss, still affects many thousands of people each year. In addition, many deadly cases of rabies still occur in Africa, India and China in spite of well-known strategies to avoid such human loss.

There are several reasons that should stimulate research on these neglected neurotropic pathogens. First, it would be morally reprehensible and a misguided calculation if scientists accepted this status quo on the grounds that these are geographically segregated diseases. Second, with increasing evidence of climate changes affecting our planet, pathogens spread by insect vectors may move to other regions of the world, resulting in a new set of emerging infections able to spread to the nervous system. Third, poliovirus and measles virus are re-emerging in some areas because of increased opposition to vaccination in both developing and western countries. Last, but not least, because the central nervous system is usually not the primary target site of the pathogen, a window of opportunity exists to interfere with pathogen spreading and prevent disease.

The conference "*Infectious Diseases of the nervous system: Pathogenesis and world impact*" will deal with most major neurotropic parasites, bacteria and viruses causing devastating diseases of the nervous system. We expect that this forum will increase the awareness of world-leading research institutions on the impact and challenges in this field and serve as a platform to foster new research and training programs on these topics.