THE IMPACT OF METHAMPHETAMINE USE ON HOST IMMUNE RESPONSE TO HERPES SIMPLEX VIRUS TYPE 2

Frances Valencia1 G N Milligan1 K A Cunningham1 N Bourne1

1University of Texas Medical Branch, Galveston, TX

Methamphetamine (METH) use is associated with increased risk for acquiring sexually transmitted infections (STIs). There is increasing evidence that this association is not based solely on behavioral risk factors. However, the impact of METH use during exposure to an STI has not been explored. We hypothesized that METH enhances the disease of an important STI, herpes simplex virus type 2 (HSV-2), by altering the host immune response to infection. Female C57BL6 mice were subcutaneously injected with METH (10 mg/kg) or saline once daily for 5 days, with intravaginal HSV-2 inoculation on the 3rd day of treatment. METH treatment resulted in earlier onset of mean clinical signs of disease vs. controls. This corresponded with increased viral DNA in the ganglia. Cytokine bead array and ELISpot analysis showed that METH significantly increased IFNy levels in the genital tract early post-infection [pi] but significantly reduced IFNy secreting cells in the genital tract later pi. Interestingly, this late infection in METH treated animals was associated with increased IFNy secreting cells in the iLN. METH alters HSV-2 disease and immune responses in the genital tract. The unexpected increase in IFNy in the genital tract early pi is of particular interest because of its role in viral clearance. These findings have important public health implications and may be more broadly applicable to other important STI’s such as HIV.