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Abstract - Master Thesis Project, the Pharmacy Programme

Innate immunity and herpes simplex virus infections

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Herpes simplex virus type 1 (HSV1) and 2 (HSV2) are human pathogens spread worldwide. HSV1 causes orofacial or genital herpes whereas HSV2 mainly infects the genital tract. After primary infection, HSV establish latent infection in neural ganglia connected to the site of infection. Reactivation can occur leading to recurrent disease. HSV may also cause infection of the CNS, e.g. HSV2 causes recurrent meningitis. The clinical symptoms in different individuals cover a broad range from asymptomatic infection to recurrent oral/genital blisters or neurological complications. It is not known what determines severity and recurrence frequency. Reactive oxygen species (ROS) produced by the NADPH oxidase in phagocytic cells are important in the immune defence against microorganisms. Recent studies have shown that ROS have a role in the severity of autoimmune diseases and in regulation of leukocyte production of cytokines. In this project, the oxygen radical production in leukocytes and the cytokine production in CSF were measured to investigate any correlation with severity and recurrence frequency. Patients from Östra Hospital Göteborg with variable degrees of severity and recurrence frequency of HSV1 infections and meningitis caused by HSV2 were included. There were seen no difference in the production of ROS in patients with recurrent HSV1 infections or meningitis caused by HSV2 compared to controls. The cytokines IP-10, IL-10, IL-12, GM-CSF, IFN- γ and TNF- α were increased in patients with meningitis compared to healthy controls. These results transcribe a role of oxygen radicals in HSV infections but imply that the production of cytokines may influence the pathophysiology.