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O0500 Functional impairment of CMV-reactive cellular immunity during pregnancy

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Background: Cytomegalovirus (CMV) is the most common congenital viral infection in developed countries. Mother-to-child transmission can cause severe child disabilities, such as psychomotor retardation and hearing loss. Intact CMV-specific cell-mediated immunity prevents uncontrolled CMV replication in healthy individuals. This study aimed to determine whether CMV-specific cell-mediated immunity is impaired in pregnant women, thus potentially increasing the overall risk of active CMV replication and transmission.

Materials/methods: CMV-specific cell-mediated immunity in peripheral blood of 60 pregnant women was determined using T-Track® CMV, a novel immune-monitoring IFN-γ ELISpot assay quantifying CMV-reactive effector cells in response to T-activated® pp65 and IE-1 CMV proteins. T-Track® CMV results were analyzed in relation to CMV-IgG and CMV-IgM serostatus.

Results: CMV-specific cell-mediated immunity was detected in 65% of CMV-seropositive pregnant women. Interestingly, the overall number of CMV-reactive cells in pregnant women was significantly lower compared to that of a matched non-pregnant control group ($p<0.001$). No significant difference in CMV-specific cell-mediated immunity was detected in the course of the three trimesters of pregnancy in CMV-IgG seropositive women. Remarkably, IE-1- and pp65-specific cellular immunity remained significantly lower postpartum (median days postnatal = 123) compared to the non-pregnant control group ($p<0.001$ and 0.0032 for IE-1- and pp65-specific response, respectively).

Conclusions: Functional analysis of CMV-reactive immune cells using T-Track® CMV suggests a systemic down-regulation of CMV-specific cell-mediated immunity in pregnant women. Further studies are needed to investigate whether this may be indicative of a higher susceptibility to CMV reactivation or transmission to the fetus.