Inflammatory cytokines may mediate cognitive dysfunction and sickness behaviour during acute illness

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Background
Delirium is characterized by acute cognitive dysfunction and sickness behaviour during an acute illness, but its pathophysiology remains unclear.

Objective
To determine the role of inflammatory cytokines in mediating cognitive dysfunction and sickness behaviour during acute illness.

Methods
We recruited 15 patients admitted with acute bacterial sepsis, 11 with non-sepsis-related acute conditions, and 38 normal healthy controls. At weeks 0, 1, 2 and 6, blood inflammatory cytokines were measured, and cognition and sickness behaviour were also assessed using the Mini Mental State Examination (MMSE, low score indicating poor cognition) and Cornell Scale for Depression in Dementia (CSDD, high score indicating more sickness behaviour), respectively.

Results
Mean age was 52 (±15) years, 54% were females. In the sepsis group, IL1 and IL4 at week 0 were negatively correlated with MMSE (p=.04 and p=.008 respectively), and TNFα positively correlated to MMSE (p=.009); no correlation was found with CSDD. Most significant correlations were seen in the non-sepsis group: IL4, IL6 and TNFα at week 1 were negatively correlated to MMSE (p=.049, p=.049, p=.046 respectively), and IL6 and TNFα positively correlated to CSDD (p=.068, p=.009 respectively). Moreover, TNFα, IL4 and IL6 at week 2 was positively correlated to CSDD (p=.016, p=.038, p=.046 respectively). And lastly, IL10 at week 6 was negatively correlated with MMSE (p=.009). As expected, no correlations between CSDD, MMSE and cytokines were found in the healthy controls.

Conclusions
Inflammatory cytokines may mediate cognitive dysfunction and sickness behaviour during acute illness. These results may enhance the understanding of the pathophysiology and potential treatment strategies of delirium.