see also CCL11

High plasma concentrations of chemokines (monocyte chemoattractant protein-1, RANTES, MIG, IP-10, and eotaxin) and chemoattractant cytokines (IL8 and IL17) were found in the lumen of human cerebral aneurysms. These findings suggest that there may be an active recruitment of inflammatory cells into the aneurysm wall that may be exploited therapeutically [1].

Cerebral edema (CE) at admission is a surrogate marker of 'early brain injury' (EBI) after subarachnoid hemorrhage (SAH). Only recently has the focus on the changes in CE after SAH such as delayed resolution or newly developed CE been examined. Among several factors, an early systemic inflammatory response has been shown to be associated with CE. Ahn et al. investigated inflammatory markers in subjects with early CE which does not resolve, i.e., persistent CE after SAH.

Computed tomography scans of SAH patients were graded at admission and at 7 days after SAH for CE using the 0-4 'subarachnoid hemorrhage early brain edema score' (SEBES). SEBES ≤ 2 and SEBES ≥ 3 were considered good and poor grade, respectively. Serum samples from the same subject cohort were collected at 4 time periods (at < 24 h [T1], at 24 to 48 h [T2]. 3-5 days [T3] and 6-8 days [T4] post-admission) and concentration levels of 17 cytokines (implicated in peripheral inflammatory processes) were measured by multiplex immunoassay. Multivariable logistic regression analyses were step-wisely performed to identify cytokines independently associated with persistent CE adjusting for covariables including age, sex and past medical history (model 1), and additional inclusion of clinical and radiographic severity of SAH and treatment modality (model 2).

Of the 135 patients enrolled in the study, 21 of 135 subjects (15.6%) showed a persistently poor SEBES grade. In multivariate model 1, higher Eotaxin (at T1 and T4), sCD40L (at T4), IL-6 (at T1 and T3) and TNF-α (at T4) were independently associated with persistent CE. In multivariate model 2, Eotaxin (at T4: odds ratio [OR] = 1.019, 95% confidence interval [CI] = 1.002-1.035) and possibly PDGF-AA (at T4), sCD40L (at T4), and TNF-α (at T4) was associated with persistent CE.

They identified serum cytokines at different time points that were independently associated with persistent CE. Specifically, persistent elevations of Eotaxin is associated with persistent CE after SAH [2].

1)
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2)
Ahn SH, Burkett A, Paz A, Savarraj JP, Hinds S, Hergenroeder G, Gusdon AM, Ren X, Hong JH, Choi HA. Systemic inflammatory markers of persistent cerebral edema after aneurysmal subarachnoid hemorrhage. J Neuroinflammation. 2022 Aug 4;19(1):199. doi: 10.1186/s12974-022-02564-1. PMID: 35927663.