CYTOKINE EXPRESSION IN CIRCULATING MONOCYTES DURING THE ACUTE PHASE OF ISCHEMIC STROKE

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BACKGROUND

Complex interactions between the CNS and the immune peripheral system in cerebrovascular diseases are increasingly recognized and appear to be bidirectional[1]. Monocytes have been recognized as important players, being both rapidly recruited in the infarcted area[2] and increased in peripheral blood within the first 24 hours after stroke[3]. Furthermore circulating monocytes have been advocated as key players in the prognosis and risk of infections after stroke[3,4].

AIM

We aimed to examine the cytokine expression profile of circulating monocytes in acute ischemic stroke and its correlation with the patient outcome.

METHODS

We collected blood samples from 21 stroke patients (SP) at 3, 6 and 24 hours after symptom onset and from 20 healthy controls (HC). From each sample we measured the mRNA levels of IL-10, TNFalpha and IL-1beta expressed by circulating monocytes.

RESULTS

Compared to HC, in SP the IL-10 expression significantly increased at 3h after symptom onset ($p<0.01$) and high levels persisted at 6h ($p<0.05$) and 24h ($p<0.01$). IL-1beta was reduced ($p<0.05$) whereas TNFalpha was increased within the first 24h after stroke, though last finding was not statistically significant. High levels of IL-10 expression during the acute phase were associated with poor outcome at 3 months (mRS>2), while association with infections after stroke was not significant.

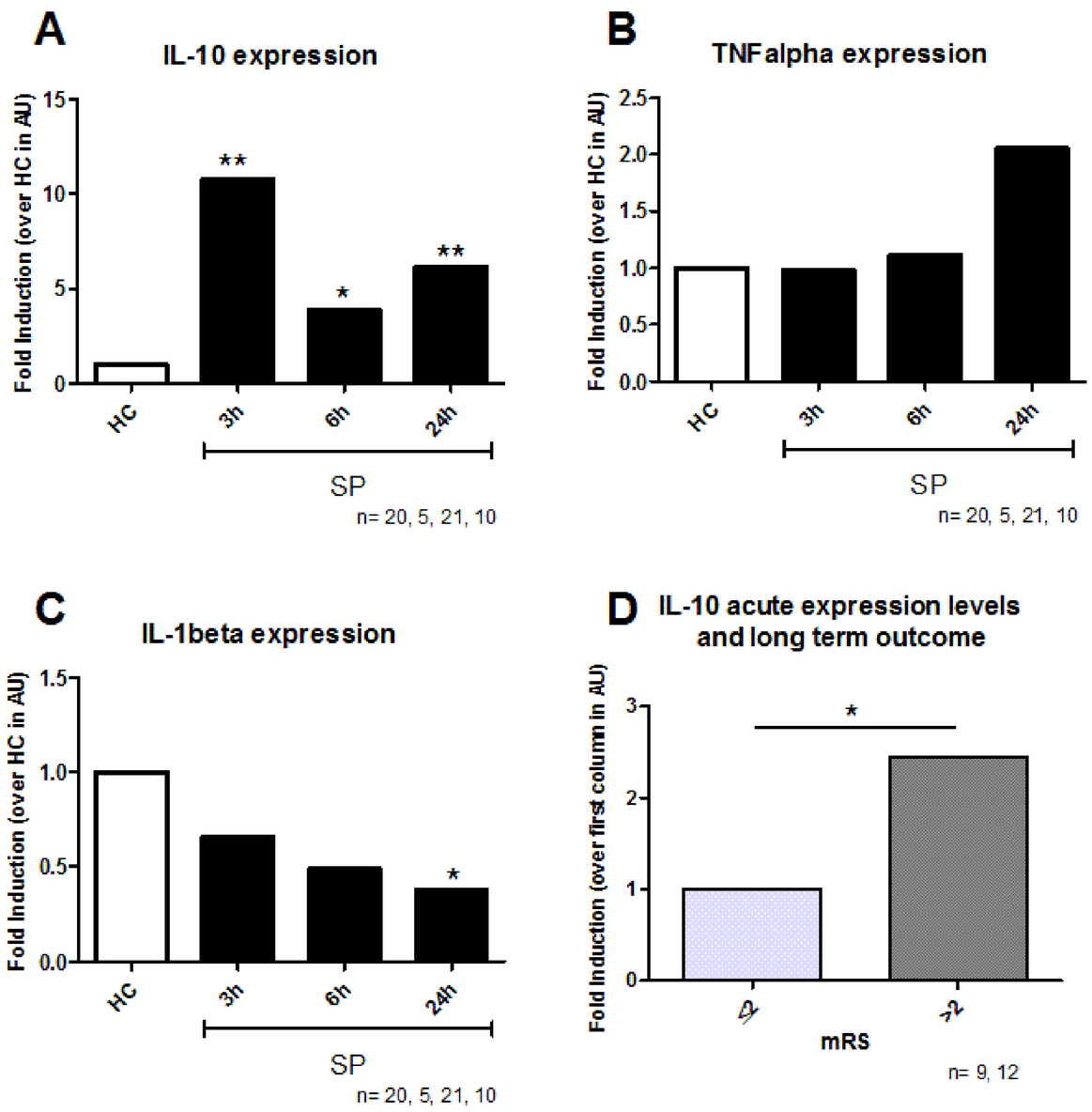

FIGURE. (A, B, C) IL-10, TNFalpha and IL-1beta gene expression in stroke patients and healthy controls. Data are expressed as Fold Inductions (over healthy controls in arbitrary units). Statistics: Kruskal-Wallis test followed by Dunn's Multiple Comparison Test. *=p<0.05; **=p<0.01. **(D) IL-10 gene expression at 6h from symptom onset in patients with good (mRS ≤ 2) and poor (mRS > 3) three-month outcome.** Data are expressed as Fold Inductions (over first column in arbitrary units). Statistics: Unpaired t Test. *=p<0.05. Abbreviations: IL-10, interleukin-10; TNFalpha, Tumour Necrosis Factor alpha; IL-1beta, interleukin-1 beta; HC, healthy controls; SP, stroke patients; AU, arbitrary units; mRS, modified Rankin Scale.

CONCLUSIONS

Circulating monocytes modify their pattern of cytokine expression acutely after stroke, mainly resulting in increased IL-10 expression. High levels of IL-10 showed correlation with 3-month outcome, suggesting that peripheral immune activation during acute stroke might have possible clinical implications.

REFERENCES.
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