LEUKOCYTOSIS & NEUTROPHILIA DURING NEUROLOGICAL DETERIORATION NEGATIVELY IMPACT OUTCOME IN ACUTE ISCHEMIC STROKE

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Objective: To determine if increased leukocyte levels during acute neurological deterioration (ND) can predict poor outcomes in patients with acute ischemic stroke (AIS).

Background: ND can be broadly defined as an acute increase in stroke severity. Leukocyte infiltration of the ischemic penumbra is thought to potentiate ND by promoting excitotoxic cell death and endothelial dysfunction. It is not known whether leukocytosis at the time of ND predicts poor patient outcomes.

Design/Methods: Patients with AIS who presented to our center within 48hrs of symptom onset between 07/2008 and 6/2010 were retrospectively identified by chart review and screened for ND (increase in NIHSS score ≥2 within a 24hr period). Patients were excluded for steroid use during hospitalization or in the month before admission and infection within the 48 hrs surrounding ND. Demographics, National Institutes of Health Stroke Scale (NIHSS) scores, leukocyte counts, ND, and poor functional outcome (mRS 3-6) were investigated in patients with ND. Lab values were assessed using Student’s t-test, Wilcoxon rank sum and ANOVA.

Results: 95 of the 292 (33%) patients screened, had ND. Of these patients, the average age was 64 (range 19-96) with 57.9% males and 65.4% blacks. No significant difference in any leukocyte counts in the 48hr preceding or during ND was found in patients who returned vs did not return to pre-ND NIHSS. Non-significant elevations in leukocyte and neutrophil counts were detected at the time of ND. Patients with a poor functional outcome had significantly higher leukocyte and neutrophil levels in the 24hr preceding (p=0.0464 and p=0.0284) and during (p=0.0106 and p=0.0028) the time of ND. Lymphocyte counts at the time of ND were significantly higher in patients who died (p=0.0309).

Conclusions: Leukocytosis, particularly neutrophilia, at the time of acute ND predicts poor functional outcomes and discharge disposition, but not mortality in patients with AIS.