

Accumulation of advanced glycation end (AGEs) products in intensive care patients: an observational, prospective study.

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BACKGROUND: Oxidative stress plays an important role in the course and eventual outcome in a majority of patients admitted to the intensive care unit (ICU). Markers to estimate oxidative stress are not readily available in a clinical setting. AGEs accumulation has been merely described in chronic conditions, but can also occur acutely due to oxidative stress. Since AGEs have emerged to be stable end products, these can be a marker of oxidative stress. Skin autofluorescence (AF) is a validated marker of tissue content of AGEs. We hypothesized that AGEs accumulate acutely in ICU patients.

METHODS: We performed an observational prospective study in a medical surgical ICU in a university affiliated teaching hospital. All consecutively admitted ICU patients in a 2 month period were included. Skin AF was measured using an AGE reader in 35 consecutive ICU patients > 18 yrs. As a comparison, historical data of a control group (n = 231) were used. These were also used to calculate age-adjusted AF-levels (AFadj). Values are expressed as median and interquartile range [P25-P75]. Differences between groups were tested by non parametric tests. $P < 0.05$ was considered statistically significant.

RESULTS: AFadj values were higher in ICU patients (0.33 [0.00 - 0.68]) than in controls (-0.07 [-0.29 - 0.24]; $P < 0.001$). No differences in skin AFadj were observed between acute or planned admissions, or presence of sepsis, nor was skin AFadj related to severity of disease as estimated by APACHE-II score, length of ICU, hospital stay or mortality.

CONCLUSION: Acute AGE accumulation in ICU patients was shown in this study, although group size was small. This can possibly reflect oxidative stress in ICU patients. Further studies should reveal whether AGE-accumulation will be a useful parameter in ICU patients and whether skin AF has a predictive value for outcome, which was not shown in this small study.

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