

血液透析患者における酸化アルブミンの構造と機能について

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The structure and function of oxidized albumin in hemodialysis patients: Its role in elevated oxidative stress via neutrophil burst

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ABSTRACT : Oxidized albumin is a reliable marker of oxidative stress in hemodialysis (HD) patients. However, oxidized albumin in vivo and its possible clinical significance has been rarely investigated. In the present study, the qualitative modification of albumin in HD patients was examined and their results were compared with healthy age-matched controls. The increase in plasma protein carbonyl levels in HD patients was largely due to an increase in oxidized albumin. Human serum albumin (HSA) of HD patients, HSA of HD patients (HD-HSA) and normal subjects (Normal-HSA) were purified on a blue Sepharose CL-6B column. An HPLC analysis also suggested that the state of the purified HSA used throughout the experiments accurately reflects the redox state of albumin in blood. HD-HSA was found to have a decreased the antioxidant activity, and was able to trigger the oxidative burst of human neutrophils, compared to Normal-HSA. HD-HSA was conformationally altered, with its hydrophobic regions more exposed and to have a negative charge. Collectively, the oxidation of plasma proteins, especially HSA, might enhance oxidative stress in HD patients.

抄録 酸化アルブミンは血液透析患者における酸化ストレスのマーカーである。しかしながら、生体における酸化アルブミンの臨床学的意義は明らかにされていない。今回血液透析患者における酸化アルブミンの構造と機能変化について検討した。透析患者より精製したアルブミン(HD-HSA)は健常人のアルブミン(Normal-HSA)より酸化され抗酸化活性の低下も観察された。またHD-HSAは、酸化修飾を受けNormal-HSAに比べて高い好中球活性化能を示した。

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