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Blood parameters indicative of oxidative stress are associated with symptom expression in chronic fatigue syndrome.

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Full blood counts, ESR, CRP, haematinics and markers for oxidative stress were measured for 33 patients diagnosed with chronic fatigue syndrome (CFS) and 27 age and sex matched controls. All participants also completed symptom questionnaires. CFS patients had increases in malondialdehyde ($P < 0.006$), methaemoglobin ($P < 0.02$), mean erythrocyte volume ($P < 0.02$) and 2,3-diphosphoglycerate ($P < 0.04$) compared with controls. Multiple regression analysis found methaemoglobin to be the principal component that differentiated between CFS patients and control subjects. Methaemoglobin was found to be the major component associated with variation in symptom expression in CFS patients ($R(2) = 0.99$, $P < 0.00001$), which included fatigue, musculoskeletal symptoms, pain and sleep disturbance. Variation in levels of malondialdehyde and 2,3-diphosphoglycerate were associated with variations in cognitive symptoms and sleep disturbance ($R(2) = 0.99$, $P < 0.00001$). These data suggest that oxidative stress due to excess free radical formation is a contributor to the pathology of CFS and was associated with symptom presentation.

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