

PRAĆENJE UKUPNOG ANTIOKSIDANTNOG STATUSA I SUPEROKSID DISMUTAZE KOD PACIJENATA SA AKUTNIM INFARKTOM MIOKARDA NA TROMBOLITIČKOJ TERAPIJI

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Precizan klinički značaj slobodnih radikala u akutnoj i hroničnoj ishemiji miokarda još uvek nije rasvetljen. Smatra se da se slobodni radikali stvaraju odmah po okluziji što do sada nije potvrđeno. Superoksid dismutaza (SOD, EC 1.15.1.1) je jedan od najvažnijih enzima antioksidantnog sistema. SOD katalizuje transformaciju superoksid radikala u vodonik peroksid koji se dalje metaboliše do kiseonika i vode. Zato se ubraja u najvažnije zaštitnike od dejstva slobodnih radikala. U ovoj studiji određivane su aktivnosti SOD u eritrocitima i ukupni antioksidantni status u plazmi (TAS) kod 50 pacijenata sa akutnim infarktom miokarda pre i 1, 3, 6, 12, 18, 24, 48, 72 sata posle trombolitičke terapije streptazom. U isto vreme određivani su i drugi markeri oštećenja srca (CK, LDH) kao i ukupni proteini i albumin. TAS i SOD određivani su Randox-ovim testovima na centrifugalnom automatskom analizatoru Monarch Plus (Instrumentation Laboratory) na 37 °C, a CK, LDH, ukupni proteini i albumin standardnim biohemijskim metodama. TAS je izražavan u mmol/L a SOD u U/g Hb. Rezultati pokazuju da je aktivnost SOD značajno niža 1 sat posle primene streptaze ($p < 0,05$) kao i da je TAS značajno viši kod pacijenata na trombolitičkoj terapiji ($p < 0,05$) u odnosu na kontrolnu grupu. Nije nađena statistički značajna korelacija TAS i SOD sa vrednostima CK i LDH. U ispitivanim vremenskim intervalima zabeleženo je smanjenje ukupnih proteina i albumina. Dobijeni rezultati ukazuju na sniženje aktivnosti SOD, verovatno zbog hiperprodukcije slobodnih kiseoničnih radikala. Povišena produkcija slobodnih radikala ide u prilog hipotezi koja uključuje slobodne radikale u patofiziološke mehanizme reperfuzije.

MONITORING OF TOTAL ANTIOXIDANT STATUS AND SUPEROXIDE DISMUTASE IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION RECEIVING THROMBOLYTIC THERAPY

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The precise clinical importance of free radicals in acute and chronic myocardial ischaemias has not yet been elucidated. It is believed that free radicals are produced as early as during the occlusions; however this has not yet been confirmed. Superoxide dismutase (SOD, EC 1.15.1.1) is one of the most important enzymes in the antioxidant system. SOD catalyses the transformation of superoxide radicals into hydrogen peroxide which is further metabolized to oxygen and water. Therefore, it is the most important protector against the effects of these radicals. The study concerns the determination of SOD activity in erythrocytes and total antioxidant status (TAS) of plasma obtained from 50 patients with acute myocardial infarction before and 1, 3, 6, 12, 18, 24, 48, 72 hours after thrombolytic therapy using streptase. At the same time other markers of heart disease (CK, LDH) and total protein and albumin were measured. TAS and SOD activities were examined using Randox reagents and centrifugal automated Monarch plus analyzer (Instrumentation Laboratory) at 37 °C and CK, LDH, total protein and albumin using standard biochemical methods. TAS was expressed in mmol/L and SOD in U/gHb. Results showed that SOD activities were significantly lower 1 hour after Streptase administration ($p < 0.05$) and significantly higher levels of TAS were found in patients on thrombolytic therapy ($p < 0.05$) comparing with controls. No significant correlation was found comparing TAS and SOD values with CK and LDH values. During the monitoring decreased total protein and albumin levels were observed. The obtained results indicate the reduction in SOD activity, probably because of hyperproduction of free oxygen radicals. The higher production of free radicals supports the hypothesis which includes these radicals in the pathophysiological mechanism of reperfusion.