

EP369

The state of superoxidodismutase activity as marker of oxidative stress in patients with impaired glycaemic states

Volha Shyshko¹, Tatjana Mokhort¹, Natalia Tsapaeva¹, Inna Buko² & Elena Konstantinova³

¹Belarussian State Medical University, Minsk, Belarus; ²Belarussian Republic Center of Cardiology, Minsk, Belarus; ³A.V.Luikov Heat and Mass Transfer Institute of the National Academy of Science, Minsk, Belarus.

One of the key enzymes of antioxidant system is superoxide dismutase (SOD) that catalyses dismutation of superoxide anionic radical ($O_2^{\cdot-}$) to molecular oxygen (O_2) and hydrogen (H_2O_2). It was revealed that activity of SOD is decreased in patients with decompensated type 2 diabetes (T2D) but there is insufficient data about enzyme activity in compensated states and prediabetes.

Purpose

To analyse the state of SOD activity in patients with compensated T2D and prediabetes.

Materials and methods

195 patients were divided into five groups: group 1 – 23 patients with impaired fasting glucose (IFG), group 2 – 23 patients with impaired glucose tolerance (IGT), group 3 – 41 patients with T2D, group 4 – 48 patients with T2D and concomitant coronary heart disease (CHD), and group 5 – 41 almost healthy person (control). All patients were before 60 years old and patients with T2D had compensated glycaemic state. Activity of SOD was measured by reduction of nitroterazolium by superoxide radical.

Results

The lowest activity was registered in group 4 (71.71 (48.14; 80.37) CU/ml) and in group 3 (76.49 (35.43; 85.22) CU/ml) compared to control group (104.96 (66.86; 142.82) CU/ml) ($P_{4-5} < 0.001$ and $P_{3-5} < 0.005$). Activity of SOD was significantly higher in patients with IGT (92.95 (60.21; 144.02)) compared to other groups ($P_{2-3} < 0.005$ and $P_{2-4} < 0.001$) and almost was not different compared to almost healthy person ($P > 0.1$). We didn't reveal any significance in activity of SOD on patients with IFG and other groups.

Conclusion

T2D is associated with decreased activity of SOD which is more significant when associated with CHD. Prediabetes is not associated with changes in the activity of SOD.

DOI: 10.1530/endoabs.37.EP369