

Abstract

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Glutathione levels in patients with erectile dysfunction, with or without diabetes mellitus.

Tagliabue M, Pinach S, Di Bisceglie C, Brocato L, Cassader M, Bertagna A, Manieri C, Pescarmona GP.

S.C.D.U. di Endocrinologia e Malattie del Metabolismo, Dipartimento di Medicina Interna, Università degli Studi di Torino, Torino, Italy.

BACKGROUND: The reduced form of glutathione (GSH) is the most important cell antioxidant and is also an essential cofactor for nitric oxide (NO) synthase that synthesizes NO from L-arginine. Reduced levels of GSH, due both to a hyperglycaemia-induced increase of free radical production and to a decrease of NADPH levels [like in diabetes mellitus (DM)], can hamper the endothelial cell functions. This condition may play an important role in the aetiology of some clinical signs, like erectile dysfunction (ED).

OBJECTIVE: The aim of this study was to test the hypothesis that GSH concentration is reduced in patients with ED and type 2 diabetes mellitus.

METHODS: We studied 111 male patients with ED: 64 with diabetes (ED/DM) and 47 without diabetes (ED/wDM); 20 patients with diabetes but without ED (DM) and 26 male normal subjects as a control group (C).

RESULTS: The GSH red blood cell concentration was significantly lower in ED than in C ($X \pm SD$; 1782.12 \pm 518.02 vs. 2269.20 \pm 231.56 $\mu\text{mol/L}$, $p < 0.001$). In particular, GSH was significantly reduced in ED/DM vs. ED/wDM (1670.74 \pm 437.68 vs. 1930.63 \pm 581.01 $\mu\text{mol/L}$, $p < 0.01$). In DM, GSH was significantly lower than in C and significantly higher than in ED/DM (2084.20 \pm 118.14 vs. 2269.20 \pm 231.56 and vs. 1670.74 \pm 437.68 $\mu\text{mol/L}$, $p < 0.002$ and $p < 0.001$ respectively). GSH showed a negative correlation with fasting glucose concentrations ($r = -0.34$, $p < 0.01$) and with the duration of DM ($r = -0.25$, $p < 0.05$).

CONCLUSIONS: A GSH depletion can lead to a reduction of NO synthesis, thus impairing vasodilation in the corpora cavernosa.

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