

Abstract

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Diagnostic value of nitric oxide, lipoprotein(a), and malondialdehyde levels in the peripheral venous and cavernous blood of diabetics with erectile dysfunction.

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OBJECTIVE: Diabetes mellitus (DM) is the single most common cause of erectile dysfunction (ED) seen in clinical practice. Evaluation of penile arterial insufficiency in diabetic patients currently entails expensive and invasive testing. We assessed the diagnostic value of certain peripheral and cavernous blood markers as predictors of penile arterial insufficiency in diabetic men with ED.

METHODS: This study was conducted on a total of 51 subjects in three groups: 26 impotent diabetics, 15 psychogenic impotent men and 10 normal age matched control males. All subjects underwent standard ED evaluation including estimation of postprandial blood sugar and serum lipid profile. Peripheral venous levels of nitric oxide (NO), lipoprotein(a) (LP(a)), malondialdehyde (MDA) and glycosylated hemoglobin (HbA1c) were obtained in all subjects. Patients in the two impotent groups underwent additional measurement of NO, LP(a) and MDA levels in cavernous blood. They also underwent intracavernosal injection (ICI) of a trimix (papaverine, prostaglandin E1 and phentolamine mixture) and pharmaco-penile duplex ultrasonography (PPDU).

RESULTS: Compared to patients in the psychogenic group, diabetic men had significantly lower erectile response to ICI ($P < 0.001$), lower peak systolic velocity (PSV) ($P < 0.001$), and smaller increase in cavernosal artery diameter (CAD) ($P < 0.001$). Peripheral and cavernous levels of both LP(a) and MDA were higher in the diabetic group as compared to the psychogenic ED group ($P < 0.001$), while the values of peripheral venous and cavernous NO were lower ($P < 0.001$) in the diabetic men. Comparison of biochemical marker assays with the PPDU results showed a significant negative correlation between both venous and cavernous LP(a) and MDA levels on the one hand, and PSV, and the percentage of CAD increase on the other. At the same time, peripheral and cavernous NO levels had a significant positive correlation with the same parameters.

CONCLUSIONS: Lipoprotein(a), MDA and NO levels were better predictors of low PSV than HbA1c, cholesterol or triglyceride levels. The finding of high levels of LP(a) and MDA with low levels of NO in the peripheral and cavernous venous blood of diabetic men with ED correlates strongly with severity of ED as measured by PPDU. This provides a rationale for further studies of biochemical markers as a surrogate for traditional invasive testing in the diagnosis of penile arterial insufficiency.

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