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Erectile Dysfunction as an Early Marker of Elevated Blood Glucose Levels and Blood Pressure in Malawian Men in a Rural Setting

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Abstract

Background: Erectile dysfunction has been found to have strong associations with chronic cardiovascular conditions like hypertension and diabetes. We sought to establish if erectile dysfunction can be used as an early marker of chronic conditions i.e., diabetes mellitus and hypertension in a rural setting in Malawian District of Blantyre.

Methods: Hundred and thirty six married men between ages of 40 and 60 were interviewed to assess their erectile function and to identify other risk factors like smoking, drinking and family history of diabetes and hypertension. Blood pressure, fasting blood glucose levels as well as height and weight measurements were taken to calculate the body mass index. Data was analyzed on GraphPad Prism™ 4. Student's *t*-test was used for statistical analysis. Differences were regarded statistically significant if *p*<0.05.

Results: We found out that out of 136 participants 49 had erectile dysfunction representing a prevalence of 36% with an average erectile function score of 18.81 (mild erectile dysfunction). Out of 49 participants with erectile dysfunction, 82% had mild, 18% had moderate and none had severe erectile dysfunction. There was higher prevalence of smoking, drinking and people with family history of hypertension and diabetes in people with erectile dysfunction as compared to the group of people without erectile dysfunction. There was no statistically significant difference in systolic and diastolic blood pressure, body mass index and fasting blood sugar levels between people with erectile dysfunction and people without but fasting blood sugar levels tend to be higher in people with erectile dysfunction.

Conclusion: This study has therefore demonstrated that mild to moderate erectile dysfunction could be an early marker of elevated fasting glucose levels in Malawian men aged between 40 and 60 years.

Keywords: Erectile dysfunction; Hypertension; Diabetes mellitus

Introduction

Erectile Dysfunction (ED) is when a man is unable to get or keep an erection that allows sexual activity with penetration [1]. Erectile dysfunction is a common problem that needs medical attention and should never be ignored. It happens to men of all ages and affects at least 1 in 5 men over the age of 40 years, increasing to about two in three men over the age of 70 years. Sometimes known as impotence, erectile dysfunction is often a sign of another physical or psychological problem [2].

Erectile dysfunction (ED) remains under-recognized as a significant and important early warning sign of cardiovascular disease. Studies suggest that the degree of risk for cardiovascular event after developing ED is similar to the risk of being a current smoker or having a family history of heart attack [3,4]. What this means is that the failure of men to seek advice about ED end up in them missing a vital predictor of impending cardiovascular disease [2]. By raising awareness of ED as an opportunity for early identification of more serious health conditions, this may help to motivate men to seek help and treatment options sooner. It is therefore plausible to suggest that assessment of erectile function in middle-aged and older men may provide a useful indicator to detect, and potentially prevent other life-threatening conditions.

This study was aimed at investigating the prevalence of ED in a rural setting in Malawi and if ED could be an early indicator of high blood pressure and diabetes mellitus in married men between the ages of 40 to 60 years.

Materials and Methods

A total of 136 Malawian men in the outskirts of Blantyre City aged between 40 and 60 years without a history of high blood pressure, stroke, and diabetes mellitus participated in the study. Body weight and height were measured for the calculation of the Body Mass Index (BMI). Blood pressure was measured using an electronic blood pressure monitor.

Blood pressure of less than 140/90 was regarded as normal and blood pressure of 140/90 or higher was regarded as having hypertension. Two separate readings of blood pressure were taken 4 hours apart.

Diabetes mellitus was assessed by means of a glucometer using fasting blood glucose levels. The fasting blood glucose level was measured in participants who had fasted for 8 hours (overnight fasting). A normal fasting blood glucose level was between 3.5–5.5 mMol/L. A diagnosis of diabetes was made if the blood glucose reading was greater than 6 mMol/L.

Prevalence and severity of ED was assessed by the International Index of Erectile Function-5 (IIEF-5) questionnaire, a validated questionnaire used to assess ED. This study was approved by the College of Medicine Research Ethics Committee.

Statistical analysis

The data of ED and non ED men was analyzed on the GraphPad Prism™ 4 statistical program. Prevalence of ED data has been expressed as percentages and blood glucose levels, BP, BMI are expressed as mean ± SEM. Student's *t*-test was used for statistical analysis. Differences were regarded statistically significant if *p*<0.05.

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	Erectile dysfunction	Non-erectile dysfunction
Hypertensive	26	35
Normotensive	23	52
Prevalence of hypertension	53%	40%

Table 1: Prevalence of hypertension in the ED group and non-ED group.

	Erectile dysfunction	Non-erectile dysfunction	*P* value
Fasting glucose level	5.48 ± 0.45	4.13 ± 0.23	0.11
Average systolic blood pressure	142.82 ± 4.22	137.63 ± 3.76	0.14
Average diastolic blood pressure	97.47 ± 5.45	94.33 ± 3.80	0.23
Body Mass Index	21.81 ± 2.75	21.67 ± 1.88	0.34

Table 2: Differences in blood glucose levels, systolic pressure, diastolic pressure and BMI between ED group and non-ED group

Results

From the study it was found out that out of 136 participants 49 had erectile dysfunction representing a prevalence of 36% with an average erectile function score on the IIEF-5 of 18.81 (mild erectile dysfunction). Of the 49 with erectile dysfunction, 26 had hypertension and 23 were normotensive representing a prevalence of 53% of hypertension in people with erectile dysfunction (Table 1).

The 87 participants without ED 35 had hypertension and 52 were normotensive representing a prevalence of 40% of hypertension amongst people without erectile dysfunction (Table 1).

Fasting blood glucose levels did not show any statistically significant difference between the two groups even though those with ED tend to have increased fasting glucose levels (Table 2). No statistically significant differences were observed in systolic pressure, diastolic pressure, and BMI between men with ED and those without ED (Table 2).

Discussion

From this study the prevalence of ED which was 36% in men between the age of 40 and 60 years which correlates with findings observed from other studies which reported the prevalence to be about 10 to 22 percent in men aged 20 and above which rises to about 40% by the age of 40 [5].

Our results are showing that blood pressure between the two groups was not different whereas we found a tendency of increased fasting glucose levels in ED patients even though the increase was not statistically significant. Looking at the classes of ED scores of participants in this study, it is observed that many had mild ED and very few had moderate ED. It is therefore understandable that we only observed a slight increase in fasting glucose levels in ED patients since their ED was just mild. This finding indicates that mild and moderate ED could be a good indicator of high fasting blood glucose levels which subsequently could develop into full blown diabetes if not checked early.

ED has also been shown to be an early warning sign of diabetes. Of all men clinically diagnosed with diabetes; between 34% and 89% will experience erectile problems [6]. Recently, a study in Nigeria reported the prevalence rate of ED in that country to be at 43.8% and that the risk factors were diabetes mellitus, hypertension, smoking, and excessive alcohol drinking [7]. Because ED, diabetes mellitus, and cardiovascular disease share many risk factors, the possibility arises that ED may be a surrogate symptom in patients with diabetes and cardiovascular disease. The major advantage of using ED as a surrogate event would be that ED is easy to recognize and that it affects a man's quality of life, therefore potentially driving patients to seek medical consultation and possibly modifying diabetes and cardiovascular disease risk factors [8].

Diabetes causes ED by damaging the blood vessels in the penis, which reduces blood flow and therefore makes it more difficult for a man to get or keep an erection. This problem is also common in men who also have high blood pressure and high cholesterol, and men who smoke. Erectile problem in men with diabetes can also be a result of damage to the nerves in the penis [9].

Conclusion and Recommendations

This study has therefore demonstrated that mild to moderate ED could be an early marker of elevated fasting glucose levels in Malawian men aged between 40 and 60 years. We recommend the development of new clinical guidelines for the treatment of ED which should require that when a patient presents to the hospital with erectile dysfunction he should not just be treated for the ED as a primary illness but rather it should be taken as a window of opportunity to investigate the underlying causes e.g., checking the blood sugar levels and blood pressure measurements. The findings of this study might not be conclusive due to the small number of participants therefore we recommend that a larger sample size should be recruited in future studies and should be carried out in different parts of the country.

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