Case Reports

Drug - Induced Diabetes Mellitus in Oghara, Delta State, Nigeria

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Abstract

Diabetes mellitus can result from drugs or chemicals among other causes. The drugs include anti-hypertensives and corticosteroids. And considering that diuretics and diuretic-containing anti-hypertensive formulations works better in blacks, these drugs are prescribed extensively; therefore, drug-induced diabetes may be frequent in our environment. Three patients with drug-induced diabetes are reported in this case series . All were on high doses of thiazide diuretic drugs and beta-blockers. Strategies to reduce the risk of drug-induced diabetes mellitus are suggested.

Keywords: *Diabetes Mellitus, Oghara, Drugs, Hypertension.*

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Locational Background

Oghara, is the suburban town in which the Teaching Hospital of the Delta State University is situated. It is about 2 hours drive to the state capital, Asaba, and about 30minutes drive to the oil-rich commercial "capital" of the state, Warri. The hospital in addition to teaching and research, provides medical services to the whole of Delta State and other surrounding states of Edo, Anambra, Bayelsa and Rivers. It has various departments including that of Family Medicine, which is the first point of call for over 80% of patients(classified or unclassified) attending the hospital for the first time. Information from the Medical Records department indicates that a minimum of 80 patients are seen per day in the Family Medicine department.

Introduction

Drug-induced diabetes occurs due to a variety of drugs and mechanisms1. The incidence of diabetes in diuretic-treated hypertensives has been reported to be around 1%, even when large doses are used[2]. The prevalence of hypertension in Nigeria is put at between 10 – 12%(rural) and 12 – 14%(urban)[3]; and the drugs commonly prescribed for hypertension are the thiazide diuretics and beta-blockers because of their efficacy in the blacks and their relative cheap cost[3] .Factors that influence the choice of drug for a patient include affordability, presence or absence of other co-morbid conditions, and availability of the drug.

One of the challenges in medicine is in the area of therapeutics, wherein the Physician attempts to match the needs of the individual patient with a specific agent from the pharmacopoeia at a dose that might be best suited to treat the individual

patient's problem [4] This report present three cases of drug-induced diabetes mellitus seen in our practice.

Case Reports

Case 1

A 49 year old female civil servant was diagnosed hypertensive. There was no family history of diabetes or hypertension. Her body mass index (BMI) was 26.4Kg/m^2 . She was started on one tablet of 'moduretic' (amiloride 5mg + hydrochlorothiazide 50mg), one tablet of 'minizide'(prazosin 0.5mg + polythiazide 0.25mg) and propanolol tablet 80mg (all to be taken once daily). Symptoms of diabetes mellitus developed 3 years later, confirmed by laboratory tests. Her anti-hypertensive drugs were changed to nifedipine and captopril. Diabetes was controlled by dietary modification. Her blood glucose remained within the normal range 1year after withdrawing thiazides and beta-blockers.

Case 2

A 50 year old full time house wife was diagnosed hypertensive, with no family history of diabetes or hypertension. Her body mass index was 25.6Kg/m^2. She was placed on bendrofluazide, 5mg and minizide (prazocin 0.5mg + polythiazide 0.25mg) and atenolol 100mg daily. The patient developed diabetes mellitus developed [4] years later . Her drugs were changed to lisinopril, and advised on dietary modification. Her blood glucose and blood pressure remained controlled from then.

Case 3

A 59 year old male hypertensive had good blood pressure control on 'moduretic' (amiloride 5mg + hydrochlorothiazide 50mg), bendrofluazide and propranolol 80mg daily. He had no family history of diabetes or hypertension. His body mass index was 27.4Kg/m^2. Diabetes developed 3 years later. His drugs were replaced by nifedipine and captopril, and he was advised on dietary modification. Six months later his blood glucose control was not satisfactory, and he required insulin. When last seen his glycaemic and blood pressure control were good and, he was not on any hypoglycaemic drugs.

Discussion

Hypertension itself may be associated with impaired glucose tolerance, insulin resistance, and obesity.[5] In addition, various classes of anti-hypertensive drugs may increase the risk of diabetes. In a meta-analysis study[6] the following drugs were implicated in causing incident diabetes : angiotensin receptor blockers, angiotensin-converting enzyme inhibitors, calcium channel blockers, beta-blockers and diuretics. All the three cases in our series were on thiazides and beta-blockers. Diuretics are an essential component of a two or three drug-regimen containing other classes of anti-hypertensive drugs, partly because the cost of drugs is an important determinant of compliance with drug treatment[7] . The use of low- dose diuretics carries only slight risk of inducing diabetes. The risk from beta-blockers is also quite small, but there is some evidence that thiazides combined with beta-blockers may be more likely to cause diabetes than either drug alone.[8] All the cases reported were prescribed thiazides and beta-blockers. The combination is best avoided in patients with a family history of type 2 diabetes .

Thiazide diuretic-induced deterioration in glucose control appears to be less with potassium supplementation.[8] The diuretic effect on glucose tolerance is attenuated when angiotensin-converting enzyme(ACE) inhibitors are given with thiazide diuretics [9].

In conclusion, proper drug selection, use of lower doses of thiazides where necessary, potassium

supplementation, and the appropriate use of angiotensin –converting enzyme inhibitors should reduce cases of drug-induced diabetes. Close monitoring of glycaemic status of hypertensive patients receiving treatment regardless of historical risk factors of diabetes mellitus should also be undertaken.

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