

Hypertension in Nigerians with type 2 diabetes: a multicentre survey

I K Akhuemokhan, F O Ehusani-Anumah, A O Ogbera, R T Ikem, F Puepet, A O Adeyemi-Doro, A Eregie, O A Fasanmade, and A E Ohwovoriole

Abstract

Hypertension is a common co-morbidity of type 2 diabetes. The aim of this study was to define the prevalence and characteristics of hypertension in Nigerian patients with type 2 diabetes. Data from 2487 diabetic patients from various centres in Nigeria were analysed. Hypertension (blood pressure >140/90 mmHg) was present in 58%. Hypertensive patients were significantly older than those without hypertension (55±14 vs 49±10 years, $p=0.0004$); and also diabetes duration (3±0 vs 2±5 years, and body mass index (BMI) (28.0±4.6 vs 20.3±4.9 kg/m²). We calculate that hypertension is common in type 2 diabetes and is particularly characterised by longer disease duration and higher BMI.

Introduction

Hypertension is an extremely common co-morbidity of diabetes, affecting 20–60% of individuals with diabetes. The prevalence of hypertension in the diabetic population is 1.5 to 3 times higher than that of non-diabetic age-matched groups.¹ The risk of vascular complications in diabetes, microvascular (retinopathy, nephropathy and neuropathy), and macrovascular (coronary artery disease, cerebrovascular disease, and peripheral artery disease) is greatly increased by hypertension.^{2–5} Many patients with diabetes have hypertension at the time of diagnosis, while others develop hypertension as the duration of the disease lengthens. Conversely a number of patients with systemic hypertension develop diabetes in the course of their disease. Therefore, hypertension should be screened for and promptly diagnosed with aggressive blood pressure control instituted in all patients with diabetes. We have used a national diabetic clinic record system to investigate the prevalence and characteristics of hypertensive diabetic patients.

I K Akhuemokhan, F O Ehusani-Anumah, A O Ogbera, R T Ikem, F Puepet, A O Adeyemi-Doro, A Eregie, O A Fasanmade, and A E Ohwovoriole.

Correspondence to: Dr I K Akhuemokhan, Department of Internal Medicine, Irrua Specialist Teaching Hospital, PMB 08, Irrua, Edo State, Nigeria.
Email: kennedydesaint@yahoo.com

Patients and methods

A register of different diabetes clinics across Nigeria was assessed (Lagos, Kaduna, Jos, Benin, Irrua, and Ife). Standard pre-tested questionnaires were used and history and anthropometric indices were input from the register. The information obtained and analysed included patient age, sex, and duration of diabetes; as well as history of hypertension, blood pressure (BP), body mass index (BMI), and waist circumference. Hypertension was defined as a BP >140/90 mmHg, or the use of antihypertensive therapy. Only patients with type 2 diabetes were selected for analysis, gestational diabetes mellitus (GDM) and type 1 diabetes were excluded. Microsoft Excel and SPSS were used to analyse the data. A p value of less than 0.05 was considered statistically significant.

Results

The data from a total of 2487 patients were analysed. Of these patients, 44% (1103) were male and 56% (1384) female. The mean age for the whole group was 53±12 years (±SD): that of males was 52±12 years and females 54±13 years. The average duration of diabetes was 2±5 years. Of the whole group, 58.5% were found to be hypertensive of whom 58% were female and 42% male.

The age, diabetes duration, BMI, and waist circumference of those with and without hypertension are shown in Table 1. It can be seen that all measurements were higher in those with hypertension.

Discussion

Diabetes is a leading cause of morbidity and death in Nigeria. Type 2 diabetes accounts for the majority of persons (90–95%) and affects older adults, particularly those over 50 years of age, as shown above and in other parts of the world.⁶ About 60% of Nigerian diabetics are hypertensive, as found in many other areas of the world.¹ Females appear to have a slightly higher incidence of concomitant type 2 diabetes and hypertension.

Up to 80% of patients with type 2 diabetes will develop or die of macro-vascular disease.⁶ In the United Kingdom Prospective Diabetes Study (UKPDS), each 10 mmHg decrease in mean systolic blood pressure was associated with a reduction in risk of 12% for any complication related to diabetes, 15% for death related to diabetes, 11% for myocardial infarction, and 13% for

Table 1 Characteristics of type 2 diabetic patients with and without hypertension (means±SD)

	Diabetes with hypertension (n=1454)	Diabetes without hypertension (n=1033)	Significance
Age (years)	55±14	49±10	p=0.0004
Duration (years)	3±6	2±5	p<0.0001
BMI (kg/m ²)	28.0±4.6	26.3±4.9	p<0.0001
Waist circumference (cm)	97.2±10.5	91.5±14.2	p=0.006

microvascular complication; controlling blood pressure is therefore very cost effective in persons with type 2 diabetes.⁷ Black hypertensive patients have frequent target organ involvement at presentation with coexistence of hypertension and type 2 diabetes.⁸

All patients with diabetes should have BP measured at the time of diagnosis or initial office evaluation and at each scheduled diabetes visit. Two or more determinations of BP should ideally be performed in the supine and standing positions using an appropriate-sized cuff. The diagnosis of hypertension in patients with diabetes should be reserved for those individuals whose blood pressure levels are found to be elevated on at least two separate occasions, separated by at least one week.⁹ The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood pressure (JNC 7) and the American Diabetes Association (ADA), recommends a target BP goal of less than 130/80 mmHg.^{10,11}

Treatment of hypertension should begin with non-pharmacological methods such as weight loss, low salt intake, increased physical activity, smoking cessation, and reduced alcohol intake.¹² These lifestyle modifications can reduce the systolic blood pressure by 4–10 mmHg.¹³ When the above fails, drugs may be added.¹⁴ An appreciable lowering of BP is associated with a reduction in mortality, and mono-therapy with the minimum effective dosage is advised as far as possible.¹⁵

The choice of antihypertensive agent for a person with diabetes may be influenced by a number of factors, including their risk profile (cardiovascular, renal, end-organ damage), preferences and previous experience of therapy, as well as costs. High-dose thiazides may adversely affect glucose, lipid and potassium levels; and beta blockers may adversely affect glucose and lipid levels, but no randomized clinical trials have shown these drugs to increase cardiovascular mortality in people with type 2 diabetes.¹³

Achieving effective control of blood pressure, and consequent therapeutic benefits, depends on adherence to therapy. Cultural health beliefs, complex therapeutic

regimens, adverse effects, tablet number burden, and poor social support are predictors of poor concordance with therapy.¹³ These issues need to be discussed with the person concerned.

References

1. Wingard DL, Barrett-Conner EL. Heart disease and diabetes: In *Diabetes in America*. Washington, DC: US Government Printing Office (NIH publ. no. 95-1468), 1995; 429–48.
2. Hasslacher C, Sted W, Wahl P, Ritz E. Blood pressure and metabolic control as risk factors for nephropathy in type 1 diabetes. *Diabetologia* 1985; 28: 6–11.
3. Knudman MW, Wellborn TA, Mc Cann VJ, Stanton KG, Constable IJ. Prevalence of diabetes complication in relation to risk factors. *Diabetes* 1986; 35: 1332–9.
4. UK Prospective Diabetic Study (UKPDS) Group. Intensive blood glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complication in patients with type 2 diabetes (UKPDS 33). *Lancet* 1998; 352: 837–53.
5. Kannel WB, McGee DL. Diabetes and cardiovascular disease. The Framingham study. *JAMA* 1979; 241: 2035–8.
6. UK Prospective Diabetes Study Group. Tight blood pressure control and risk of macro-vascular and micro-vascular complication in type 2 diabetes. UKPDS 38. *BMJ* 1998; 317: 703–13.
7. Arauz-pacheco C, Parrot MA, Raskin P. The treatment of hypertension in adult patients with diabetes (Technical Review). *Diabetes Care* 2002; 25: 134–47.
8. Okesina AB, Omotoso ABO, Gadsama AA, Ogunriola EO. Frequency of hypertension in diabetes patients. *Int Diabetes Dig* 1996; 7: 39–40.
9. American Diabetes Association: Standards of Medical Care for Patients with Diabetes (Position Statement). *Diabetes Care* 2002; 25(Suppl. 1): S33–S49.
10. Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. The 7th report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. *JAMA* 2003; 289: 2560–71.
11. American Diabetes Association. Treatment of hypertension in adults with diabetes. *Diabetes Care* 2003; 26 (Suppl. 1): S80–S82.
12. Ebrahim S, Smith GD. Lowering blood pressure. A systematic review of sustained effects of non pharmacological interventions. *J Public Health Med* 1998; 20: 441–8.
13. Anon. A digest of The Global Guidelines for Type 2 Diabetes. *Diabetes Voice* 2006; 51(Suppl.): 22–7.
14. Snow V, Weiss KB, Mottur-Pilson C. The evidence base for tight blood pressure control in the management of type 2 diabetes mellitus. *Ann Int Med* 2003; 138: 58–92.
15. Marrel AO, Agatha N. Diabetes and hypertension as seen in Mulage, Uganda. *Int Diabetes Dig* 1995; 6: 69–71.