MORBIDITY PATTERN OF DIABETIC ADMISSIONS AT THE ABIA STATE UNIVERSITY TEACHING HOSPITAL, ABA, NIGERIA.

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ABSTRACT

Diabetes mellitus is associated with numerous complications depending on the degree of glycaemic control. The aim of this study is to determine the prevalence of common diabetic complications associated with the disease. A retrospective study of medical admissions of diabetic patients from January 2009 to December 2011 was conducted. The total number of medical admissions for the period under study was 5862 patients; 853 (14.5%) of whom were diabetic patients. Of the 853 diabetic patients, 326 (38.22%) were males and 527 (61.28%) were females. Their ages ranged from 22 to 85 (mean 56.4 ± 12.7 years).The indications for admission were chronic diabetic complications of which uncontrolled diabetes, neuropathy and diabetic foot ulcers were the commonest. There was a low incidence of retinopathy (2.5%) and hypoglycaemia (1.8%). The high incidence of leg ulcer/gangrene in diabetics and the possibility of resultant amputation calls for strict glycaemic control with good health education in order to reduce the risk of development of complications.

Key Words: Morbidity, Diabetic admissions, glycaemic control, Aba, Nigeria.

INTRODUCTION

Diabetes mellitus (DM) is a metabolic disorder primarily characterized by elevated blood glucose level, macrovascular and microvascular complications that substantially increase the morbidity and mortality associated with the disease and reduce the quality of life of the affected individual (Klein, 1995). It is associated with absolute or relative deficiencies in insulin action and/or insulin secretion (WHO, 1985). It is the commonest endocrine disease whose prevalence is said to be on the increase globally (Amos et al; 1997). Whilst type 1 DM appears to be uncommon in the developing countries, type 2 DM on the other hand, is at its highest prevalence in non-caucasoid communities (King et al., 1988).

Globally, the prevalence of DM for all ages was about 2.8% as at 2000, and is estimated to rise to 4.4% by 2030 (Wild et al., 2004; Okafor and Ofoegbu, 2011). According to data from International Diabetes Federation (IDF), the prevalence of DM ranged from 2.4% to 7.9% for those 20-79 years old; with an average global prevalence of 5.1% (IDF, 2005). In the United States of America, Mokdad et al. (2000), showed that the prevalence of DM had increased by 33% from 4.9% in 1990 to 6.5% in 1998. In Nigeria however, non-communicable

diseases such as DM, cardiovascular diseases (especially, ischaemic heart diseases and hypertension), stroke, cancer and chronic kidney and respiratory diseases were responsible for 60.7% of admissions into the medical wards of the University of Nigeria Teaching Hospital, Enugu, South East Nigeria over a five-year period 1998-2003 (Ike, 2008; Okafor and Ofoegbu, 2011). In a later study by Osuafor et al. (2004), DM assumed the leading cause of medical admissions at Nnewi, also in South-east Nigeria.

Poor glycaemic control causes the accumulation of sorbitol and advanced glycaemic end-products which are responsible for causing the chronic complications of DM (Brownlee, 1994). Diabetes Mellitus is a life-long disease and so there is a tendency that the morbidity associated with it will also increase with time (Ihekwaba et al., 2001). Studies have shown that DM and its related complications were responsible for nearly 10% of medical deaths (Chukwak et al., 1999).

At the Abia State University Teaching Hospital (ABSUTH), an increasing number of our medical cases have DM or one of its complications. This study was therefore set out to determine the

magnitude of the problems associated with this disease amongst Nigerian adults living in the metropolitan city of Aba, in South Eastern Nigeria.

MATERIALS AND METHODS

Study duration and Protocol: This was a three-year retrospective study of all diabetic patients or its complications seen at the Accident and Emergency department and the Diabetic clinic of the Abia State University Teaching Hospital (ABSUTH), Aba, from January 2009 and December 2011, after approval by the ethics committee of the hospital.

Participants: Eight hundred and fifty three diabetic patients (527 females (61.78%) and 326 males (38.22%) were involved in this study.

Study procedure and analysis: All patients with an admission diagnosis of DM or its complications were recruited into this study. Their case files were retrieved and information obtained with regard to ages, sex, occupation and duration of DM. Associated features as well as the presence of diabetic complications were also identified. Those diabetics with duration of more than five years were evaluated by the ophthalmology unit of the hospital to identify those with retinopathy. Investigations done on the patients included serum urea and creatinin, urinalysis, cholesterol, wound culture and sensitivity.

Statistical Analysis: Data analysis was done using the SPSS version 10. Comparison of mean was done using the student t-test. The level of statistical significance was taken as $p < 0.05$.

RESULTS

Out of 5862 medical emergencies seen at the Accident/Emergency and Diabetic clinic of the hospital, there were 853 (14.55%) diabetic mellitus patients seen comprising of three hundred and twenty six (326) (38.22%) males and five hundred and twenty-seven (527) (61.78%) females. Their ages ranged from 22 to 85 with a mean age of 56.4 ±12.7 years. The indications for admission are shown in table 1.

Four hundred and seventy nine (56.1%) of the cases were due to uncontrolled hyperglycaemia, while the remaining three hundred and seventy-four (43.9%) had different types of complications. These were peripheral neuropathy in 90 cases (10.6%), foot ulcers with or without gangreen in 79(9.2%), hyperglycaemic coma (DKA) in 69 (8.1%), ketoacidosis with or without coma in 53 (6.2%), nephropathy in 47 (5.5%) and hypoglycaemia 15 cases (1.8%). Retinopathy was present in 21 cases (2.5%) in combinations with other complications. Thirteen of those with retinopathy also had foot ulcers/gangrene; whilst four each had cerebrovascular disease and nephropathy respectively. *Staphylococcus aureus*/pyogenes were isolated from 56 (81%) of patients with foot ulcers.

Table 1: Indications of Admissions in 853 Diabetic Patients

Indications for Admission	Number of Patients%		
	Males	**Females**	**Total**
Uncontrolled Diabetcis	184 (21.5%)	295 (34.6%)	479 (56.1%)
Neuropathy	28 (3.3%	62 (7.3%)	90 (10.6%)
Foot ulcers/Gangrene	28 (3.3%)	51 (5.9%)	79 (9.2%)
Hyperglycaemic Coma (DKA)	41 (4.8%)	28 (3.3%)	69 (8.1%)
Ketoacidosis with or without coma	16 (1.9%)	37 (4.3%)	53 (6.2%)
Nephropathy	15 (1.8%)	32 (3.7%)	47 (5.5%)
Retinopathy	5 (0.6%)	16 (1.9%)	21 (2.5%)
Hypoglycaemia	9 (1.1%)	6 (0.7%)	15 (1.8%)

DISCUSSION

Strict blood glucose control has been identified by many studies as a reliable method of preventing and/or delaying the progression of complications in diabetic patients (DCCT, 1993; UKPDS, 1998a).

This is even of greater importance when managing DM in a resource poor community such as ours (Ngwogu et al., 2012). The admission rate of the diabetics of 14.55% of total admissions in this study is more than what has been reported previously in some parts of Africa where the rates are between 3.3

to 5.9% (Pobee, 1997; Adubofour et al., 1993). However, this admission rates are similar to the results of the study by Okafor and Ofoegbu (2011), with admission rate of 13.4%. This showed an increasing trend when compared with the earlier observations in the same centre 8.8% (Ike, 2008). A general increase in over all admission rate (of 34%) was observed at the Enugu centre by Ike (2008).

The increase in the number of people suffering from non-communicable diseases have been linked to unhealthy ways of living and life-style such as consumption of excess calories and reduction in level of physical activities with the consequent development of obesity and insulin resistance (Reaven, 1988). Obesity has been clearly linked with diabetic patients from all the major ethnic regions of Nigeria (Bakari et al., 2005, Ofoegbu et al., 2005, Fasanmade et al., 2007, Chuhwak et al., 2002).

The high figure obtained in this study may be attributed to the increasing public awareness of the diabetic disease and its complications, coupled with the existence of a Diabetic Association of Nigeria Chapter in our hospital. This has attracted many people for screening on a continuous basis in order to detect early hyperglycaemia. The female gender prevalence of 61.78% in our study is more than the males and is similar to the results from other centres where females comprised more than 60% of cases (Okesina et al., 1999, Erasmus et al., 1999). However, this is at variance with the results from Jos, Nigeria which had higher male gender prevalence (Chukwak at al., 1999). This female preponderance in this study may be due to the higher prevalence of obesity among females than males in our environment (Ngwogu et al., 2012; Amodu et al., 2004; Fadinpin et al., 2004), similar to studies at other centres (Senbanjo et al., 2007).

The finding that uncontrolled diabetes is the most common indication for admission in this study is in keeping with the results of previous workers (Chukwak et al., 1999; Adubofour et al., 1993; Burdon, 1998; Mba, 2001). Again the disease was found to be more prevalent amongst the females than males and this is in tandem with their higher chances of becoming obese (Ngwogu et al., 2012).

Diabetic foot gangrene is a major public health problem in the tropics (Ward, 1982). Public enlightenment on its aetiology, diagnosis and early management is necessary. Unless this fact is appreciated, severe diabetic foot gangrene with a life threatening limb will continue to result in high

mortality and major amputations in order to spare life (Osisioma et al., 1992).

Foot ulcers have remained a major problem in Nigerian diabetics (Chukwak et al., 1999; Osisioma et al., 1992). The etiological factors that lead to foot ulcers have received considerable attention (Rafferty et al; 1986, Morain et al; 1990, Delbridge et al; 1985). Ischaemia and neuropathy are the primary pathologic mechanisms leading to foot problems in diabetic mellitus (Delbridge et al; 1983). Together, they set the stage for pressure necrosis, ulceration, infection and gangrene (Logerto et al., 1992).

The prevalence of diabetic foot ulcers in this study was 8.10%. This is worrisome even though it is less than that of the 15.1% figure of Port-Harcourt workers (Ihekwaba et al., 2001). Studies from other centres in Nigeria show diabetic foot ulcers and hyperglycaemic emergencies (DKA) as common indications for hospital admissions (Ajayi et al., 2009, Unachukwu et al., 2008, Chijioke et al., 2010, Ogbera et al., 2007). Many of the diabetic patients with foot ulcers/gangrene resist early amputation and this has often increased the mortality. Another important finding in this study is the high prevalence of neuropathy and retinopathy. It is likely that the impaired skin sensitivity and the defective visual acuity did not allow the patients to see what ever needle – stick injuries they had sustained which subsequently progressed to ulcer (Ihekwaba et al., 2001). Diabetic patients are advised to wear shoes that protect their feet to minimize injuries to them. There is therefore, a need for an early, intensive and aggressive ophthalmologic examination as well as examination of their feet in order to detect early needle–stick injuries.

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AUTHORS' CONTRIBUTIONS

Ngwogu K. O, Mba I.EK and Ngwogu A.C. contributed to the successful completion of this study. Their carrier background played important roles.