INDICATIONS AND OUTCOME OF ADMISSION OF DIABETIC PATIENTS INTO THE MEDICAL WARDS IN A NIGERIAN TERTIARY HOSPITAL- A TWO YEAR REVIEW

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ABSTRACT

Background/ objectives*: In 2013, two – third of the estimated 318 million individuals living with diabetes resided in developing countries. The determination of the burden of diabetes in hospitals will help in designing an efficient tool for planning, delivery and evaluation of targeted interventions.*

Patient/materials and methods*: A retrospective description of both types 1 and 2 diabetics at the medical wards of Federal Medical Centre, Makurdi from January 1, 2012 to December 31, 2013. Age, gender, diagnosis and outcome were extracted fromadmissions/discharge logs. Diagnosis of diabetes was based on fasting blood glucose = 7mmol/L on = 2 occasions. Severe hypertension was defined as = 160/100 mmHg. Analysis of data was done using Epi Info version 2.3. The qualitative data were expressed as frequencies and percentages and quantitative data were expressed as mean and standard deviation (SD).*

Results*: A total of 195 diabetics were admitted with 187 (95.9%) type 2 diabetics and 8 (4.1%) type 1 diabetics. There were 113 (57.9%) males and 82 (42.1%) females with a gender difference of 1.3:1. The mean age was 53.5±15.7 years. The age range 51 – 60 years had the highest number of patients on admission. Majority (76.9%) of admissions was through the emergency unit. The commonest indication for admission washyperglycemia (60.5%). Most (76.9%) were discharged, 8.2% died, 6.2% were transferred-out, 5.6% were referred to other centres and 3.1% discharged against medical advice.*

KEYWORDS*: indication, outcome, admission, diabetes, hyperglycemia.*

INTRODUCTION

Non communicable diseases are now the leading causes of mortality in both developing and developed countries of the world[1, 2]. The estimated worldwide prevalence of diabetes mellitus for all age groups was 2.8% in 2000[3], increasing progressively to 8.3% in 2013[4]. This translated to more than 380 million people with another 316 million persons having impaired glucose tolerance. In sub Saharan Africa, an estimated 19.8 million adults have diabetes – a regional prevalence of 4.9% with Nigeria having 3.9million cases[4]. In Africa, diabetes probably has the highest morbidity and mortality rates of all chronic noninfective diseases[5]. The position of diabetes amongst medical admissions vary widely[6,7,8].

In this paper, we present the indications for admission and the outcome of such admissions in individuals living with diabetes into the medical wards of Federal Medical Centre, Makurdi over a two year period.

MATERIALS AND METHODS

This was a retrospective descriptive hospital based study of both type 1 and type 2 individuals living with diabetes admitted into the medical wards of Federal Medical Centre, Makurdi North-Central Nigeria over a two year period (January 1, 2012 to December 31, 2013). Approval for the study was obtained from the Ethics Committee of the

institution, a 400 bed tertiary referral centre with average weekly diabetes clinic attendance of 60 follow- up patients and 5new patients. Relevant data (age, gender, diagnosis and outcome) were extracted from the case files of patients from the records department of the hospital in conjunction with ward admissions/discharge logs and accident/emergency records. Diagnosis of diabetes mellitus was based on American diabetes Association criteria[9], 2007. Severe hypertension was defined by the seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC-7)[10] as = 160/100 mmHg. Analysis of data was done using Epi Info version 2.3. The qualitative data were expressed as frequencies and percentages while the quantitative data were expressed as mean and standard deviation.

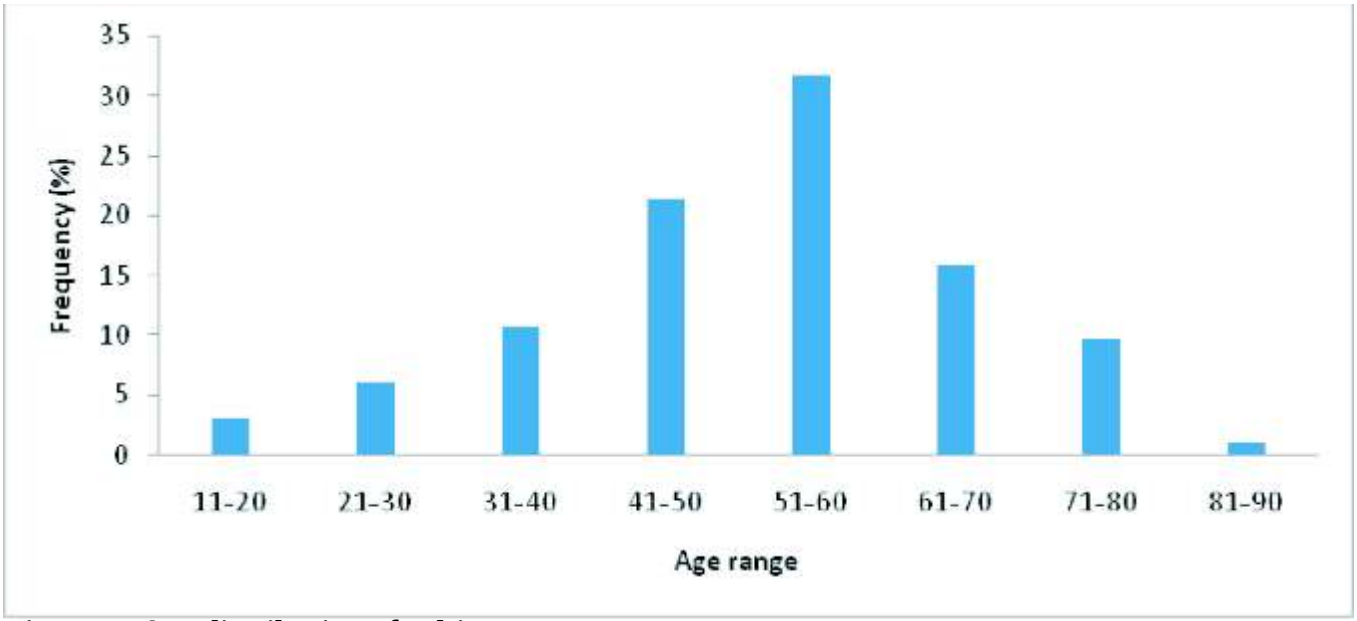

Figure I: Age distribution of subjects.

POINT OF ADMISSION

Study subjects were admitted from the accident and emergency department, the medical Out-patient department and patients transferred into medical wards from other departments of the hospital. One hundred and fifty (76.9%) patients were admitted via the accident and emergency, making it the commonest route to the wards. Thirty nine patients (20%) were admitted from the medical out-patient department clinics and a small number of patients (3.1%) were transferred from surgery department, pediatrics department and obstetrics and gynecology departments to medical wards.

INDICATIONS FOR ADMISSION

The indications for admitting diabetic patients could be broadly classified into acute metabolic emergencies (e.g. diabetic ketacidosis (DKA), hyperosmolarnon ketoticstates (HHS) and hypoglycemia), poorglycemic control (in either types of diabetes) and systemic complications (e.g. uremia etc). Some indications could not fit into this classification and are lumped into the class designated as 'others'. The commonest reason for admission was diabetic ketoacidosis. The least common indication for an entity was hypoglycemia. A breakdown of these indications is presented in table I.

Table I: Indication for admission of study subjects into medical wards.

Indicatio	n	Frequenc	y	%	
Acute complication	s				
DKA	*	5	6	28.	7
HHS[+]		16		8.2	
Hypoglycaemia		6		3.1	
Poor glycaemic contro	l				
Type 1 DM	‡	8		4.	1
Type 2 DM		38		19.5	
Systemic complications	:				
Nephropathy/ uraemi	a	1	6	8.	2
DM foot syndrome/ vascular ulcers		21		10.8	
Severe hypertension		31		15.9	
Others (e.g. soft tissue, GIT[§§], nervous etc)		3		1.5	
Total		19	5	100.	0

Abbreviations: *DKA (diabetic ketacidosis), [+]HHS (hyperosmolar non ketotic state), ‡DM (Diabetes mellitus), [§§]GIT (gastroenterology/hepatology).

OUTCOME

Out of the 195 patients admitted within the study period, a hundred and fifty patients (76.9%) were discharged, sixteen (8.2%) died, six (3.1%) left against medical advice (voluntarily self discharged before the managing team could certify them fit for discharge), twelve (6.2%) patients were transferred to surgical wards and eleven (5.6%) patients were referred for end stage renal care in another centre.

Amongst the mortality recorded within the study period, 5 patients died from cerebrovascular accidents (CVA) and another 5 from acute metabolic decompensation complicated by severe sepsis while 4 patients died from uremic complications and 1 each from diabetic foot syndrome complications and concomitant stage 3 acquired immune deficiency syndrome.

DISCUSSION

This study described the indications for admission and the outcome of such admissions in individuals living with diabetes into the medical wards of a tertiary referral centre in north central Nigeria over a two year period.

Individuals living with diabetes mellitus made up 10.0% of admissions within the two year period under review. This observation is in agreement with findings from a study in south westNigeria where Ogbera[11], in an urban environment, found a prevalence of 10.3%. Because of demographic and epidemiological reasons, the burden of diabetes differ from region to region in the same country, with some reported prevalence as low as 4% (in a setting like ours)[12] and as high as 15% in another report from Lagos[13].

The age group 51 – 60 years was the most prevalent age range on admission. Authorities on diabetes have stated that this was the decade with the highest impact of diabetes[5]. Studies from south west[13] and south eastern Nigeria[16, 17] reported similar observation.

A hundred and fifty (76.9%) patients in the wards arrived through the emergency unit with hyperglycemic complications or less frequently, referred from the out – patient clinic for resuscitation. In some cases, the visit to the emergency unit was the first time such patients became aware that they are diabetic and had to be admitted. The emergency route is a very common point of admission into the wards in many institutions[16, 18, 19]. Okafor et al reported 81.8% of the diabetes load passed through the emergency in a 2 year study from a tertiary centre in south east Nigeria[16].

The commonest indication for admission in this study was diabetic ketoacidosis in 28.7% of patients. This was higher than 19.5% reported by Chijioke et al[18] from Ilorin, north central Nigeria but lower than 40% reported in a study from Lagos[13], south west Nigeria. These studies differed from this report in many respects. While the former study examined a 10 year trend amongst type 2 diabetics and the latter study was prospective, lasting one year and used the largely abandoned World Health Organization (WHO) criteria[14, 15] of 1985 and 1999. This 2 year retrospective review involved both types 1 and 2 diabetics. In this study, the acute metabolic (hyperglycemic) emergencies (DKA and HHS) accounted for 36.9% of admissions. Like most metabolic variables in life, the magnitude of hyperglycemic cases vary considerably in reports from other centres[13, 20,22] with Nnadike et al[20] which reported 18.7% to Ogbera et al[13] which noted that 40% of their admissions was because of hyperglycemia in their respective reports.

Hyperglycemia is the common denominator in diabetic ketacidosis, non ketotic hyperglycaemic states and in individuals admitted purely for (chronic) poor glycaemic control. These indications, summed up accounted for 60.5% of all diabetics admitted within the study period. Similar studies from south east[17] Nigeria reported 57%, a value slightly lower than our observation while 62.5% was reported from south - south Nigeria[20]. Other common indications were individuals that had poorly controlled fasting plasma glucose in type 2 diabetes (19.5%) and the presence of severe hypertension (15.9%). The latter is particularly of significance, being the commonest systemic complication in individuals on admission. Diabetes often co-exist with other potent cardiovascular risk factors especially hypertension, thus increasing the risk of premature death by about three fold[21]. Also, the prevalence of hypertension in individuals with diabetes varied in different studies[13, 17, 18].

Most (76.9%) type 2 diabetics and all type 1 diabetics on admission during the study period were discharged. This was the observation from most series [12,13,17,18]. In this study, the case fatality rate was 8.3%. This was higher than the values reported from Ekiti (3.4%) by Ajayiet al[12] but similar to 8.1% report by Unadike et al[20] from Uyo. Progressively higher mortality rates were reported from Enugu (24%)[8] , Lagos (22.6%)[11], Umuahia(14%)[17]and Ilorin (32.5%)[22].There were 5 deaths from haemorrhagic cerebrovascular (CVA) accident, a catastrophic event that often complicate long standing poorly controlled diabetes. Cerebrovascular accidents have remained among the first five causes of death in individuals living with diabetes in other reports[13, 22, 23]. There was another 5 deaths attributed to various septicemic illnesses in diabetics with either HHS (3), DKA (1) and nephropathy (1). Septicemia remains an important precipitant of diabetic emergencies (both hyperglycaemic emergencies and hypoglycaemia) and the terminal diagnosis in poorly managed infections (especially urinary tract infection, pneumonia and diabetic foot ulcer)[19, 22, 23].

It is worthy of note that all the patients that voluntarily self discharged had advanced diabetic

foot ulcers. The factors responsible for this were not fully understood and if observed from other centres, may be a topic for future study. Individuals with foot ulcers had a high predilection forsepsis and a high case fatality rate[13, 17]. The final outcome of those transferred out (6.2%) and referred for end stage renal care (5.6%) at other centrescould not be ascertained.

CONCLUSION: Diabetes is a major cause of morbidity and mortality and contributes significantly to the burden of disease locally and globally. Hyperglycemia was the commonest cause of morbidity while systemic complications (CVA, sepsis) were the commonest causes of death in patients with diabetes at Federal Medical Centre, Makurdi, Nigeria.

RECOMMENDATION: Public enlightenment about diabetes and its prevention must be instituted to reduce the morbidity and mortality associated with the disease. Manpower training (including specialist doctors, nurses, educators / counsellors, dietician, chiropodist) should be encouraged, medications used for diabetes treatment should be made more affordable and available and facilities for management of diabetes and its complications should also be provided to improve outcome.

Conflicts of interest / competing interest – None.

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