Common reasons for hospitalization among adult patients with diabetes in a private medical college in Kathmandu

P Adhikari, UN Pathak and N Subedi

Department of Internal Medicine, Nepal Medical College Teaching Hospital, Atterkhel, Jorpati, Kathamndu, Nepal

Corresponding author: Dr. Prabin Adhikari, Lecturer, Department of Internal Medicine, Nepal Medical College Teaching Hospital, Jorpati, Kathmandu, Nepal; e-mail: prabinadhikari@yahoo.com

ABSTRACT

Diabetes Mellitus is one of the important non communicable disease affecting the adult populations around the world. Incidence of diabetes increasing in South Asia. Nepal is also experiencing increasing in diabetes disease burden. Diabetes mellitus is one of the important causes of hospital admission in the western world. In this study we evaluated the causes of hospital admission amongst diabetic population. Most common cause is of diagnosis is some forms of infections commonest (20%) being urinary tract infections. Ten out of total 69 patients had septicemia. Six patients out of 69 had sputum positive pulmonary tuberculosis only one patient presented with metabolic complications of diabetes i.e. diabetic ketoacidosis. Coronary artery disease with heart failure was present in 14 patients. Five patients had diabetic nephropathy and 3 had retinopathy. This shows that infections is the major cause of hospital admission for diabetics followed by heart failure. Tuberculosis is important diagnosis in person with diabetes. This study shows more female patients get admitted and amongst admitted patents glycemic control is poor. This signify that women had more complications than male counter parts.

Keywords: Diabetics, Ketoacidosis, infections.

INTRODUCTION

According to the World Health Organization's recent update, diabetes, hypertension, and obesity are one of the top five contributing risk factors for cardiovascular deaths in the world.[1] It is estimated that, in 2010, 6.4% of adults would have diabetes mellitus affecting 285 million in the world and it will increase to 7.7% by 2030, affecting 439 million adults. Of special note is that there will be a 67% increase in the prevalence of diabetes in developing countries from 2010 to 2030.[2] There has been no nationwide survey to estimate the actual prevalence of diabetes and pre-diabetic conditions among Nepali population. The currently reported prevalence is either from the hospital and urban area based studies.[3] A study done in Nepal showed out of total admission in the hospital The most common affected system was respiratory system 31.73% followed by gastrointestinal including liver 18.64%, cardiovascular 11.34%, genitourinary 12.01%, neurology 9.23%, endocrine 4.80%.[4]

MATERIALS AND METHODS

All the patients admitted in general medical ward of Nepal Medical College Teaching Hospital (NMCTH) for a period of 6 months from July 2012 to December 2012 were enrolled in the study. Patients were selected for the study if they are already on any form on hypoglycemia treatment. They were followed upto discharge for the final diagnosis. All the patients were informed and taken consent to publish their data. Data were entered in Microsoft Excel and analyzed.

RESULTS

Mean age of admitted patient is 60 years minimum was 28 and maximum is 91 years old. Out of total 69 patients Female were39 (56.5%) and male30 (43.5 %.) Fig. 1.

Most of the patients admitted were with complaints of fever 55 followed by loss of consciousness 6 dizziness 5, swelling of body and nausea and vomiting 3 each (Fig. 2).

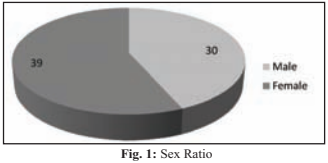

Fig. 1: Sex Ratio

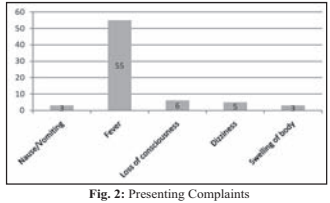

Fig. 2: Presenting Complaints

DIAGNOSIS

Diagnosis of all admitted patients is given in Table-1. Most common cause is of diagnosis is some forms of infections commonest (20%) being urinary tract infections. Ten out of total 69 patients had septicemia. Six patients out of 69 had sputum positive pulmonary tuberculosis only one patient presented with metabolic complications of diabetes i.e. diabetic ketoacidosis. Coronary artery disease with heart failure was present in 14 patients. Five patients had diabetic nephropathy and 3 had retinopathy. Twenty eight patients had more than one diagnosis. Three patients were admitted for hypoglycemia. Out of 10 patients admitted for the control blood sugar by initiation of insulin. Five of them were new patients who had very high blood sugar (HbA1c >10%).

Table-1- Diagnosis

Diagnosis	N (%)
Coronary artery disease and heart failure	14(20%)
Urinary Tract Infections	14(20%)
Septicemia	10 (14%)
Typhoid Fever	10(14%)
Pneumonia	10(14%)
Admitted for control of blood sugar	10(14%)
Acute Gastroenteritis	8(11%)
PTB	6 (8%)
Diabetic nephropathy	5 (7%)
Acute Kidney Injury	4 (5%)
Diabetic Retinopathy	3 (4%)
Hypoglycemia	3(4%)
Electrolyte imbalance	3(4%)
Peripheral neuropathy	2 (2%)
Diabetic Ketoacidosis	1(1%)

DURATION OF DIABETES

Fig. 3. shows duration of diabetes diagnosis at the time of admissions. Most of the patients were in the group of 0-5 years duration. Only one patient had diabetes more than 15 years. Five patients were admitted with the diagnosis of diabetes for the first time for the control of blood sugar.

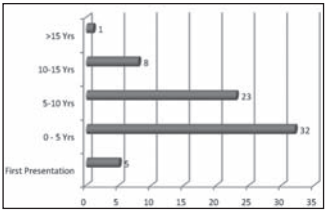

Fig. 3: Duration of Diabetes

DRUGS AND BLOOD SUGAR CONTROL

Excluding 5 patients who were detected for the first time total 15 patents were on insulin, 26 patients were on two Oral hypoglycemic agents and 10 each in single and three Oral hypoglycemic agents. Single agent was metfromin in all the patients. Total 25 patients had good glycemic control (HbA1 C < 7%) 32 patients had uncontrolled diabetes and three presented in hypoglycemia (Fig. 4).

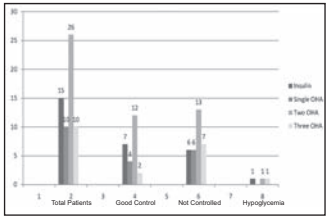

Fig. 4: Drugs & Blood Sugar Control

DISCUSSION

Diabetes mellitus is a group of metabolic disease characterized by hyperglycaemia resulting from defects in insulin secretion, insulin action, or both. Diabetes causes about 5% of all deaths globally each year. The chronic hyperglycaemia of diabetes is associated with long-term damage, dysfunction, and failure of various organs, especially the eyes, kidneys, nerves, heart, and blood vessels.50% of people with diabetes die of cardiovascular disease.[5] According to the Centers for Disease Control and Prevention, 25.8 million persons in the United States (or 8.3% of the population) have the disease, which is diagnosed in approximately 2 million persons each year. Diabetes is usually silent in its initial stages, and irreversible complications may develop before treatment is begun.[6] The prevalence of diabetes is much higher among South. South Asians are 3 to 5 times more likely to develop type 2 diabetes.

The prevalence of diabetes among South Asians living in the United Kingdom, the United States and Canada has been found to be as high as 12 to 15%, compared with 3 to 5% in white people.[7] Lifestyle factors may be an important determinant in the increased risk of type 2 diabetes amongst South Asians. It has found that Indians, Pakistanis and Bangladeshis are respectively 14%, 30% and 45% less likely to meet current guidelines for physical activity than the general population. Qualitative study of South Asian women has shown that many barriers exist to increasing physical activity, including other physical ailments, cultural norms, and social

expectations[8] Type 2 diabetes presents around a decade earlier in South Asians than indigenous Chinese, Japanese and UK populations.[8] A study done by Sharma et al in Nepal shows that subjects aged 20–100 34% of the participants had hypertension, and 6.3% were diabetic. 28% were overweight, and 32% were obese. 22.5% of the participants had metabolic syndrome based on International Diabetic Federation criteria and 20.7% according to the National Cholesterol Education Program definition. Prevalence was higher in the less educated, people working at home, and females.[9] Cardiovascular complications of diabetes are more common amongst South Asians, with a 50% higher mortality compared to Europids. Similarly, renal disease is three times more common amongst South Asian diabetic subjects than Europids.[10]

In Hong Kong, Over 30% of patients admitted to the hospital with stroke, heart failure, acute myocardial infarction, or renal failure requiring dialysis have diabetes as a major contributing factor. Leading causes of death among diabetic patients in Hong Kong are renal failure and cerebrovascular accidents.[11] A study done in Kuwait shows Diabetes was the principal or secondary diagnosis in 40.6% of hospitalizations. Unrecognized diabetes or new hyperglycemia was found in 12.9% of the patients. Patients with diabetes or new hyperglycemia were significantly older and had longer hospital stay compared to non-diabetic patients. The five most frequent specific causes for hospitalizations in patients with medical history of diabetes as a secondary diagnosis were acute coronary syndrome (27.2%), pneumonia (14.3%), heart failure (11.2%), cerebrovascular accident (10.3%), and chronic obstructive airway disease (3.6%).[12] In our study infections was most common cause of admission they have higher incidence of Urinary tract infections(20%) and significant number (14%) have septicemia, and pneumonia 20% each similar percentage of the patients had some forms of ischemic heart disease resulting in heart failure. Despite the increased prevalence of diabetes among South Asians, a majority of cases go undiagnosed and, as a result, poorly controlled. Several studies have shown that many South Asians have diabetes-related complications at the time of diagnosis, indicating a prolonged latent phase of undiagnosed diabetes.[13] In our study we found that only 36% of the patients had good control of diabetes 3% of the patients had episodes of hypoglycemia. Patients with insulin are better controlled than on oral hypoglycemic agents.A study done in Georgia Hospital Uninted States of America Shows in Diabetes was listed as a diagnosis in 14% of discharges of adult patients during our study period (57% women; 62% non-Hispanic white; mean age, 64 years; mean length of stay, 5.7 days; and mean hospital charge, $13,540). Among patients with a diagnosis of diabetes, the 3 most common categories of discharges were “diseases of the circulatory system” (33%), “endocrine, nutritional, and metabolic; immunity disorders” (13%), and “diseases of the respiratory system” (11%). When infections were identified and aggregated, however, these conditions became the second most frequent discharge category (14% of all hospital discharges among patients with diabetes). “Congestive heart failure “coronary atherosclerosis,” and “acute myocardial infarction” were the first, second, and fifth most frequently found unique diagnoses, respectively, among patients with diabetes.[14] In a study done by Jose Menzin et al a total of 9,887 patients were studied. Mean A1c level was < 7% for 5,649 (57.1%) patients, 7% to < 8% for 2,747 (27.8%), 8% to < 9% for 1,002 (10.1%), 9% to < 10% for 312 (3.2%), and 10% or more for 177 (1.8%). Over a mean (median) 40 (40) months of follow-up (interquartile range = 30-50 months), 28.7% (n = 2,838) of patients had 1 or more diabetes- related hospital admissions. Adjusted mean estimated costs of diabetes-related hospitalizations per study patient were $2,792 among those with mean A1c of < 7% and $6,759 among those with mean A1c of 10% or more.[15]

Diabetic subjects probably have a higher risk of infections like asymptomatic bacteriuria, lower extremity infections, reactivation tuberculosis. Population-based data support a probable higher influenza/pneumonia mortality rate in patients with diabetes.[16] In our study 8% of the patients had tuberculosis all of them sputum positive. About 10% of TB cases globally are linked to diabetes A large proportion of people with diabetes as well as TB is not diagnosed, or is diagnosed too late. Early detection can help improve care and control of both.[17] In a study several patient characteristics are associated with an improvement in glycemic control. Patients from higher socioeconomic levels and men more often achieved well-controlled diabetes. This fits with other published findings that diabetic women received less aspirin and their blood pressure and LDL cholesterol levels were less likely to be controlled compared with men. Lower socioeconomic status was also found to be related to higher rates of obesity, hyperlipidemia, and poorly controlled diabetes.[18] In the developing countries this gap gets more widely open and as the incidence of diabetes increase it is going to be worse.In our study we did not analyse the characteristics of good versus poor glycemic control but more admission of female patients goes in favor of the fact that glycemic control is poor in female population so is the morbidity from diabetes.

Diabetes is one of the important diagnoses in patients in our hospitals also. People with diabetes are in increased risk of infections and other complications. Glycemic control is usually poor. Though incidence and prevalence

of diabetes in male is higher but morbidity with diabetes is more with female signifying poor management of this disease in female populations Increasing incidence of diabetes are exposing our system to various other problems like increased need of hospital beds , need for management of more cases of ischemic heart disease and chronic kidney disease and increased demand for tuberculosis management and more need for intensive care management for septicemia and other life threatening complications.

REFERENCES

1. World Health Organization, Global Health Risks: Mortality and Burden of Disease Attributable to Selected Major Risk, World Health Organization, Geneva, Switzerland, 2009.
2. Shaw JE, Sicree RA, Zimmet PZ. Global estimatesof the prevalence of diabetes for 2010 and 2030. Diabetes Res Clin Practice 2010; 87: 4-14.
3. Pokharel DR, Gautam N, Archana J, Nagamma T, Kumar R, Sapkota RM. Frequency of Type 2 Diabetes mellitus and Impaired Glycemia in a Teaching Hospital of South-Western Nepal. *Asian J Med Sci* 2011; 202-206
4. Pokharel BR, Humagain S, Pant P, Gurung R, Koju R, Bedi TRS. Spectrum of diseases in a medical ward of a teaching hospital in a developing country. J Coll Med Sci-Nepal. 2012; 8: 7-11.
5. Diabtes. http://.who.int/mediacentre/factsheets/fs312/en/index.html (Updated on November 2009).
6. Centers for Disease Control and Prevention. 2011 national diabetes fact sheet. (http://www.cdc.gov/ diabetes/pubs/factsheet11.htm).
7. Chowdhury TA. Preventing diabetes in South Asians. *Brit Med J* 2003; 327: 1059-60.
8. McCarthy M, Hitman GA, Shields DC *et al*. Family studies of noninsulin- dependent diabetes mellitus in South Indians. *Diabetologia* 1994; 37: 1221-30.
9. Sanjib Kumar Sharma, Anup Ghimire, Jeyasundar Radhakrishnan, Lekhjung Thapa, Nikesh Raj Shrestha, Navaraj Paudel, Keshar Gurung, Maskey R, Anjali Budathoki.Nirmal Baral, and David Brodi. Prevalence of hypertension, obesity, diabetes, and metabolic syndrome in Nepal.iinternational journal of hypertension; 2011:821971. DOI:10.4061/2011/821971 pp.82197
10. Mather HM, Chaturvedi N, Fuller JH. Mortality and morbidity from diabetes in South Asians and Europeans: 11 year follow-up of the Southall Diabetes Survey, London, UK. *Diabetic Med* 1998; 15: 53-9.
11. Vivian W.Y. Lee, Pak Yip LeungGlycemic Control and Medication Compliance in Diabetic Patients in a Pharmacist-Managed Clinic in Hong Kong Am J Health Syst Pharm. 2003;60(24)
12. Al-Adsani AMS, Abdulla KA, Reasons for hospitalizations in adults with diabetes in Kuwait, Int J Diab Mellitus (2011), doi:10.1016/j.ijdm.2011.01.008
13. Misra A, Vikram NK. Insulin resistance syndrome (metabolic syndrome) and obesity in Asian Indians: evidence and implications. *Nutrition* 2004; 20: 482-91.
14. Curtiss B. Cook, Circe Tsui, David C. Ziemer, Dorothy B. Naylor, William J. Miller. Common Reasons for Hospitalization among adult patients with diabetes. Endocrine Practice 2006 volume 12, Number 4 July August 2006
15. Joseph M, Jonathan RK, Joseph C, Francis L, Bin Z, Mark F, Peter J. Neumann. Relationship Between Glycemic Control and Diabetes-Related Hospital Costs in Patients with Type 1 or Type 2 Diabetes Mellitus. *J Manag Care Pharm* 2010; 16: 264-75.
16. Wheat LJ. Infection and diabetes mellitus. *Diabetes Care* 1980, 3: 187-95.
17. www.who.int/tb Septiember 2011.
18. Shani M, Taylor TR, Vinker S, Lustman A, Erez R, Elhayany A, Lahad A. Characteristics of Diabetics with Poor Glycemic Control Who Achieve Good Control. *J Amer Board Fam Med* 2008; 21: 490-6.