

Endocrine-related diseases in the emergency unit of a Tertiary Health Care Center in Lagos: A study of the admission and mortality patterns

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ABSTRACT

Introduction: Non-communicable diseases are emerging as an important component of the burden of diseases in developing countries. Knowledge on admission and mortality patterns of endocrine-related diseases will give insight into the magnitude of these conditions and provide effective tools for planning, delivery, and evaluation of health-care needs relating to endocrinology. **Materials and Methods:** We retrieved medical records of patients that visited the emergency unit of the Lagos University Teaching hospital, over a period of 1 year (March 2011 to February 2012) from the hospital admissions and death registers. Information obtained included: Age, gender, diagnosis at admission and death, co-morbidities. Diagnoses were classified as endocrine-related and non-endocrine related diseases. Records with incomplete data were excluded from the study. **Results:** A total of 1703 adult medical cases were seen; of these, 174 were endocrine-related, accounting for 10.2% of the total emergency room admission in the hospital. The most common cause of endocrine-related admission was hyperglycaemic crises, 75 (43.1%) of cases; followed by diabetes mellitus foot syndrome, 33 (19.0%); hypoglycaemia 23 (13.2%) and diabetes mellitus related co-morbidities 33 (19.0%). There were 39 endocrine-related deaths recorded. The result revealed that 46.1% of the total mortality was related to hyperglycaemic emergencies. Most of the mortalities were sepsis-related (35.8%), with hyperglycaemic crises worst affected (71.42%). However, the case fatalities were highest in subjects with thyrotoxic crisis and hypoglycaemic coma. **Conclusion:** Diabetic complications were the leading causes of endocrine-related admissions and mortality in this health facility. The co-morbidity of sepsis and hyperglycaemia may worsen mortality in patients who present with hyperglycaemic crises. Hence, evidence of infection should be sought early in such patients and appropriate therapy instituted.

Key words: Admissions, diabetes, endocrine-related diseases, hyperglycaemia, hypoglycaemia emergency, mortality

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INTRODUCTION

Emergency is a condition determined clinically or considered by the patient or his relatives as requiring urgent medical, dental or allied service, failing, which it would result in loss of life or limb.¹ The identification of epidemiological trends in hospital admissions are essential for health-care planning and resource allocation.

Non-communicable diseases particularly cardiovascular diseases, diabetes mellitus (DM), cancer and respiratory diseases are the major causes of morbidity and mortality in the developed world and are emerging as an important component of the burden of diseases in developing countries.²

There are reports on studies carried out in Nigeria and other African countries on the pattern of medical cases admitted to the emergency unit, but none to our knowledge on the pattern of endocrine-related diseases presenting as an emergency among adult patients in sub-Saharan Africa.³⁻⁶ In a study carried out in Port-harcourt, Nigeria, on the medical ward admissions over a 4-year period; non-communicable diseases constituted 56.2% of all medical admissions, where cardiovascular, endocrine and renal systems were most commonly seen, accounting for

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35.7%, 18.5%, and 16.8% respectively.⁶ Knowledge on admission and mortality patterns of endocrine-related diseases will give insight into the magnitude of the condition and provide effective tools for planning, delivery and evaluation of health-care needs.

This study aimed to determine the pattern of admission and mortality of endocrine-related diseases in the emergency unit of the Lagos University Teaching Hospital (LUTH).

MATERIALS AND METHODS

This retrospective study was carried out at the adult emergency unit of the LUTH, situated in Lagos state in South Western Nigeria. The hospital occupies 92 acres of land and is an over 700 bed facility, making it one of the largest teaching hospitals in Nigeria. It serves as a referral hospital for Lagos and its adjoining states. The emergency unit have a capacity of 50 beds.

We retrieved medical records of patients that visited the emergency unit of the hospital over a year period (March 2011 to February 2012) from the hospital admissions and death registers. Information retrieved included: Age, gender, diagnosis at admission and death, co-morbidities. Records with incomplete data were excluded from the study.

Diagnoses were classified as endocrine-related and non-endocrine related diseases.

Data analyses

Data were entered into Excel work sheet for cleaning and then transferred to Statistical Package for Social Sciences (SPSS for windows version 17) for analysis. Quantitative data were expressed as mean \pm standard deviation while qualitative variables were expressed as percentages. Test statistics used was χ^2 for qualitative data. A $P \leq 0.05$ was regarded as statistically significant.

RESULTS

A total of 1703 adult cases were seen in the emergency unit from March 2011 to February 2012. There were 959 males and 744 females. Of the 1703 cases, 174 were endocrine-related, accounting for 10.2% of the total emergency unit visitation/admission in the hospital [Figure 1]. Males were 81 (46.6%) and females 93 (53.4%) females, giving a male to female ratio of 1:1.2. The mean age of the patients was 47.8 ± 14.2 , with an age range of 18-78 years.

Out of the 174 endocrine-related cases, 75 (43.1%) had hyperglycaemic crises (diabetic ketoacidosis, 36% and hyperosmolar hyperglycaemic state 64%); 33 (19.0%) had diabetes mellitus foot syndrome (DMFS); 23 (13.2%) had hypoglycaemia; 3 (1.7%) had DM hand syndrome; 1 (0.6%) had Conn's syndrome;

1 (0.6%) had Cushing's syndrome; 5 (2.8%) had thyroid diseases, and 33 (19.0%) had DM related co-morbidities [Tables 1 and 2].

A total of 39 endocrine-related deaths were recorded in the emergency room within this period [Table 3]. There were 18 (46.2%) males and 21 (53.8%) females ($\chi^2 = 0.002$, $P = 0.964$). About 35.8% (14 out of 39) of the mortalities were sepsis-related. Sepsis occurred more amongst patients who died from hyperglycaemic crises (71.42%). The fatality rates were higher in patients who presented with thyrotoxic crises, 60% (3 out of 5) and hypoglycaemic coma, 39.1% (9 out of 23).

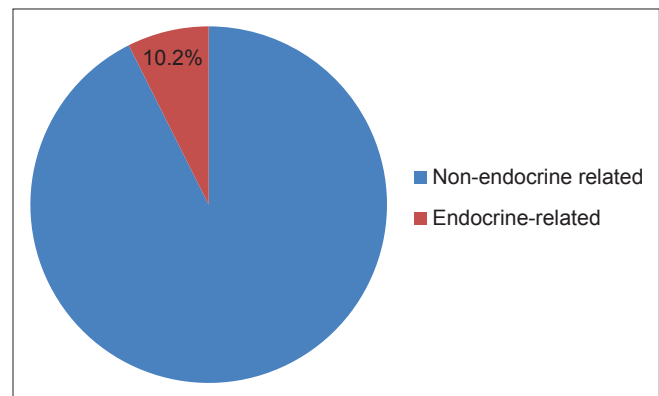


Figure 1: Percentage distribution of endocrine and non-endocrine admissions

Table 1: Distribution of endocrine-related admissions

Diagnoses	Frequency n (%)	Gender distribution	
		Male (%)	Female (%)
Hyperglycaemic crises	75 (43.1)	36 (20.6)	39 (22.4)
DMFS	33 (19)	15 (8.7)	18 (10.4)
Hypoglycaemia	23 (13.2)	12 (6.9)	11 (6.3)
DM co-morbidities	33 (19)	15 (8.7)	18 (10.4)
Thyroid crises	5 (2.8)	2 (1.2)	3 (1.7)
DM hand syndrome	3 (1.7)	1 (0.5)	2 (1.2)
Conn's syndrome	1 (0.6)	–	1 (0.5)
Cushing's	1 (0.6)	–	1 (0.5)
Total	174 (100)	81 (46.6)	93 (53.4)

DM – Diabetes mellitus; DMFS – Diabetes mellitus foot syndrome

Table 2: Contribution of DM co-morbidities to endocrine-related admissions

DM co-morbidities	Frequency (%)
Sepsis	19 (57.6)
CKD	8 (24.2)
Stroke	1 (3.03)
Hypertension	1 (3.03)
Pneumonia	3 (9.1)
Pyelonephritis	1 (3.03)
Total	33 (100)

DM – Diabetes mellitus; CKD – Chronic kidney disease

Table 3: Distribution of endocrine-related mortalities

Diagnoses	Frequency n (%)	Sepsis- related n (%)	Gender distribution	
			Male	Female
Hyperglycaemic crises	18 (46.1)	10 (71.42)	10 (25.6)	8 (20.5)
DMFS	5 (10.3)	2 (14.30)	2 (5.1)	3 (7.7)
Hypoglycaemia	9 (23.1)	1 (7.14)	4 (10.3)	5 (12.8)
DM co-morbidities (sepsis/CKD)	4 (12.8)	1 (7.14)	1 (2.5)	3 (7.7)
Thyroid crises (storm/ thyrotoxic heart disease)	3 (7.7)	0	1 (2.5)	2 (5.1)
Total	39 (100)	14 (100)	18 (46.2%)	21 (53.8%)

CKD – Chronic kidney disease; DM – Diabetes mellitus; DMFS – Diabetes mellitus foot syndrome

DISCUSSION

This study has attempted at showing the pattern of admissions and mortality of patients with endocrine-related conditions in the emergency setting in a resource poor tertiary health facility of a developing country. The diagnoses were mainly based on clinical and laboratory findings as autopsy could not be carried out for the majority of the patients on cultural and religious grounds.

Global projections of disease burden and mortality have indicated a significant shift from infection/communicable to non-communicable diseases world-wide, and this transition is expected to affect developing countries like Nigeria.⁷ It has been projected that by the year 2000, the prevalence of non-communicable disease will parallel that of the communicable diseases in developing nations, which will have to contend with the double burden of the two groups of diseases.⁸

In our study, endocrine-related diseases accounted for a significant proportion of the total adult medical emergency unit admissions, with DM emergencies predominating. This finding is in agreement with documentations of the preponderance of chronic non-communicable diseases including endocrine diseases in various hospitals across developing countries especially Nigeria.^{3,9-14} The preponderance of diabetic emergencies may be associated with the increasing prevalence of DM across the world, particularly in sub-saharan African where Nigeria has the highest number of people living with DM. The reported prevalence of DM across Nigeria varies from 0.65 in rural Mangu village to as high as 11.0% in urban Lagos where this study was carried out,¹⁵ this may also be linked to the increasing urbanization, reduced physical activity and the epidemic boom of obesity especially in the developing world.

DMFS, hypoglycaemic crises and sepsis also accounted for the majority of the admissions. This finding is similar to

results of a study carried out in Ilorin, Nigeria, in which the highest numbers of admissions were due to diabetic hyperglycaemic emergencies, septicemia, and diabetic foot syndrome.¹⁶

The mean age of the subjects was similar to that seen in other related studies in Nigeria.⁶ Gender disparity was observed in the overall distribution of endocrine-related admissions, with more females compared to males. This finding is in variance with reported gender distribution of non-communicable diseases reported in previous studies.^{6,17} However, Chinenye *et al.* reported a female preponderance in their study on the profile of DM patients, and suggested it may be a reflection of the health-care financing pattern in the country with females likely to be supported by relations and loved ones with financial assistance toward hospital visits than males.¹⁵

The mortality rate was also highest in patients who presented with hyperglycaemic emergencies, sepsis, thyroid, and hypoglycaemic crisis. This is also similar to the reports on mortality patterns in DM in other studies.^{14,16} A greater proportion of those who presented with thyroid crises and hypoglycaemia died. Late presentation and prolonged neuroglycopenia with irreversible brain damage is likely responsible for the non-response to treatment in hypoglycaemic patients. Thyroid storm and thyrotoxic heart disease were the causes of death in patients who presented on account of thyroid crises. The prognosis for thyrotoxic crisis remains poor with high mortality recorded in untreated cases and mortality rates of 20-30% reported even with treatment.^{18,19} This finding is similar to those cited by Ogbera.²⁰

Most of the mortalities recorded were complicated by sepsis. This alluded the findings of a huge burden of infectious diseases on the outcome of medical admissions in a similar study.^{6,21} From this study, death from hyperglycaemic crises appears to be mostly associated with sepsis. The immunosuppressive state associated with DM may be responsible for the high rate of infection among this group of patients; and sepsis may also be the precipitant for the hyperglycaemic crisis in them.

CONCLUSION

Endocrine-related diseases are common in the emergency room of this health facility, with diabetic complications accounting for most of the admissions and mortality. Case fatality for thyroid crisis remains high. Sepsis contributed adversely to the outcome of these admissions, particularly on hyperglycaemic crises. Surveillance for infection is recommended for patients presenting to the emergency room with endocrine-related conditions, especially hyperglycaemic emergencies.

REFERENCES

- Vasnaik M. Emergency Medicine department-operational essentials for effective implementation. In: Gupta S, Parmar NK, Kant S, editors. *Emergency Medical Services and Disaster Management-A Holistics Approach*. 1st ed. New Delhi: Jaypee Publishers; 2001. p. 38-48.
- Gill G. Editorial: Non-communicable disease in the developing world. *Diabetes International* 1999;9:58.
- Ogun SA, Adelowo OO, Familoni OB, Jaiyesimi AE, Fakoya EA. Pattern and outcome of medical admissions at the Ogun State University Teaching Hospital, Sagamu – A three year review. *West Afr J Med* 2000;19:304-8.
- Afuwape OO, Alonge TO, Okoje VM. Pattern of the cases seen in the accident and emergency department in a Nigerian Tertiary Hospital over a period of twelve months. *Niger Postgrad Med J* 2007;14:302-5.
- Nkombua L. The practice of medicine at a district hospital emergency room: Middleburg Hospital, Mpumalanga Province. *S Afr Fam Pract* 2008;50:65.
- Agomuoh DI, Unachukwu CN. Pattern of disease among medical admission in Portharcourt, Nigeria. *Nig Med Pract* 2007;51:45-50.
- Mathers CD, Loncar D. Projections of global mortality and burden of disease from 2002 to 2030. *PLoS Med* 2006;3:e442.
- Yach D, Hawkes C, Gould CL, Hofman KJ. The global burden of chronic diseases: Overcoming impediments to prevention and control. *JAMA* 2004;291:2616-22.
- Okunola OO, Akintunde AA, Akinwusi PO. Some emerging issues in medical admission pattern in the tropics. *Niger J Clin Pract* 2012;15:51-4.
- Sanya EO, Akande TM, Opadijo G, Olarinoye JK, Bojuwoye BJ. Pattern and outcome of medical admission of elderly patients seen at University of Ilorin Teaching Hospital, Ilorin. *Afr J Med Med Sci* 2008;37:375-81.
- Odenigbo CU, Oguejiofor OC. Pattern of medical admissions at the federal medical centre, Asaba-a two year review. *Niger J Clin Pract* 2009;12:395-7.
- Ike SO. The pattern of admissions into the medical wards of the University of Nigeria Teaching Hospital, Enugu (2). *Niger J Clin Pract* 2008;11:185-92.
- Ansa VO, Ekott JU, Bassey EO. Profile and outcome of cardiovascular admissions at the University of Uyo Teaching Hospital, Uyo – A five year review. *Niger J Clin Pract* 2008;11:22-4.
- Ogbera O. Burden of diabetic illness in an urban hospital in Nigeria. *Trop Doct* 2007;37:153-4.
- Uloko AE, Ofoegbu EN, Chinenye S, Fasanmade OA, Fasanmade AA, Ogbera AO, *et al.* Profile of Nigerians with diabetes mellitus-Diabcare Nigeria study group (2008): Results of a multicenter study. *Indian J Endocrinol Metab* 2012;16:558-64. Available from: <http://www.ijem.in/text.asp?2012/16/4/558/98011>. [Cited 2013 Apr 20].
- Chijioke A, Adamu AN, Makurdi AM. Mortality patterns among type 2 diabetes patients in Ilorin, Nigeria. *JEMDSA* 2010;15:1-4.
- Akinkugbe OO, editor. *Non Communicable disease in Nigeria; Final report of a National survey*. Lagos: Federal Ministry of Health and social services; 1997. p. 64-90.
- Jameson L, Weetman A. Disorders of the thyroid gland. In: Braunwald E, Fauci A, Kasper D, *et al.*, editors. *Harrison's Principles of Internal Medicine*. 15th ed. New York: McGraw-Hill; 2001. p. 2060-84.
- Tietgens ST, Leinung MC. Thyroid storm. *Med Clin North Am* 1995;79:169-84.
- Ogbera AO. A two-year audit of thyroid disorders in an urban hospital in Nigeria. *Nig Q J Hosp Med* 2010;20:81-5.
- Sani MU, Mohammed AZ, Bapp A, Borodo MM. A three-year review of mortality patterns in the medical wards of Aminu Kano Teaching Hospital, Kano, Nigeria. *Niger Postgrad Med J* 2007;14:347-51.

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