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CASE FATALITY AMONG HYPERTENSION-RELATED ADMISSIONS IN ENUGU, NIGERIA

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ABSTRACT

Objective: To determine the case fatality rate and ultimate causes of death among patients with hypertension-related conditions admitted to an urban tertiary hospital.

Method: A five-year review of hypertension-related admissions into the medical wards of the University of Nigeria Teaching Hospital, Enugu, between 1995 and 1999, was undertaken.

Results: 7220 patients were admitted into the medical wards during the period under review. Of these, 445(6.2%) were due to hypertension-related causes. Of the later, 285 (64%) were males while 160(36%) were females. One hundred and ninety one of the hypertension-related admissions died, giving a case fatality of 42.9%. The mean age at death was 54.8±15.8 years (53.5±15.9 years for males; 57.2±15.4 years for females, t=2.47, df =189, p=0.117). Sixty six percent of these were males while thirty four percent were females. Eighty six (45%) of the deaths occurred during acute hypertensive crises such as cerebrovascular accidents, hypertensive encephalopathy, and acute renal failure. Other important complications leading to death were congestive cardiac failure, accounting for thirty three cases (17.3%); and chronic renal failure 32 (16.8%). In twenty one (11%) hypertension-related admissions, the causes of death were not documented.

Conclusion: Hypertension, with its related complications, constitute a major cause of morbidity and mortality in our medical wards. The case fatality rate is very high and often mostly avoidable complications were responsible. There is need to further study the determinants of these avoidable causes of death.

Key Words: Case fatality, hypertension-related admissions, Enugu.

INTRODUCTION

Hypertension is the most common cardiovascular disease worldwide[1]. It affects 10-15% of adult African population and cuts across every socio-economic group[2,3]. Hypertension-related complications are very common and tend to run a more aggressive course in Africans and African-Americans than in Caucasians[4]. The magnitude of the health burden posed by hypertension in Nigeria is quite appreciable as shown in various studies[5-9].

There is however paucity of hard data on the morbidity and mortality rates from this disease in our environment[10, 11]. This study was therefore carried out to provide information on the case fatality rate among hypertension-related admissions into our teaching hospital.

PATIENTS AND METHODS

The medical records, comprising admission and discharge registers, death certificates, as well as case notes, of in-patients with hypertension-related diagnoses admitted into the medical wards of , University of Nigeria Teaching Hospital (UNTH) Enugu, were reviewed. The age, sex, year of admission, as well as probable causes of death was obtained from these records. The period covered was from February 1995 to December 1999. The diagnosis of hypertension was based on the WHO/ISH cut-off (140/90mmHg) [12]. Hypertension-related admissions were considered to be patients admitted as a result of hypertension or its complications. From the available data, the annual and overall case fatality rates were calculated for the period of study. The annual case fatality rate was defined as number of death due to hypertension in a specific year/number of hypertension-related admissions in that year x 100(%).The overall case fatality rate was defined as total number of death due to hypertension during the 5 year period studied / total number of hypertension-related admissions during this period x 100(%).

Statistical analysis was done using statistical package for social sciences (SPSS) version 11.0. Comparison of proportions was done using chi square test. Statistical significance was taken as P value <0.05.

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RESULTS

Table 1 shows the yearly distribution of admissions into the medical wards. A total of 7220 patients were admitted into the medical wards during the study period. Of these 4528 were males, while 2692 were females giving a male: female ratio of 1.68:1. Four hundred and forty five of these admissions were due to hypertension and its related complications. This constituted 6.2% of the total medical admissions. Of the hypertension-related admissions, 285 (64%) were males while 160 (36%) were females giving a male is to female ratio of 1.78:1. There was no noticeable change in number of patients admitted from year to year.

Figure 1 shows the distribution of hypertension-related deaths by sex and age group. Mortality was generally higher in males than females. The figure also showed that most of the deaths occurred between the age groups 40-69 years with a peak at 60-69 years. The mean age at death was 54.8±15.8years (53.5±15.9 years for males and 57.2 ± 15.4 years for females; t=2.47, df=139, p=0.117).

Figure 2 depicts the annual and overall hypertension-related admissions (HTN Rel. adm.), deaths (HTN Rel.deaths) and case fatality rates for the period of study. One hundred and ninety one (191) of the four hundred and forty five (445) patients admitted on account of hypertension and its associated complications died despite all efforts to salvage them giving a case fatality rate of 42.9%. The mean, range and median annual case fatality rates for the 5-year period were 43.7%, 31.6% - 57.5% and 45.6% respectively. Hypertension related deaths contributed 9.6% of the total in-patient deaths. The case fatality rates rose progressively between 1996 and 1998 and then fell. The major causes of death in patients with hypertension and its complications are shown in **Table 2**. At least 45% of the deaths resulted from hypertensive emergencies. These were cases due to cerebrovascular accidents (CVA), hypertensive encephalopathy, and acute renal failure. CVA was the leading cause of death, followed by congestive cardiac failure (CCF) and chronic renal failure (CRF). In 21 (11%) of the hypertension-related deaths, the cause of death was not documented. More males died from CVA, congestive cardiac failure, chronic renal failure and hypertensive encephalopathy. More females however, died from multi-infarct dementia and diabetic disorder with a ratio of 1.5:1 and 1.3:1 respectively. Overall mortality was higher in males than females with a ratio of 2:1.

Table 1: **Yearly Distribution of Admissions in the Medical Ward.**

	Total Admissions			Hypertension-Related Admissions N(%)		
Year	Males	Females	Total	Males	Females	Total
1995	811	412	1223	89	41	130(10.6)
1996	787	500	1287	46	33	79(6.1)
1997	1038	617	1655	44	26	70(4.2)
1998	1022	556	1578	62	25	87(5.5)
1999	870	607	1477	44	35	79(5.3)
Total	4528	2692	7220	285	160	445(6.2)
Ratio	**1.68:1**			**1.78:1**		

N (%) = Number (%)

Figure 1:**Distribution of Hypertension-Related Deaths by Age Group and Sex.**

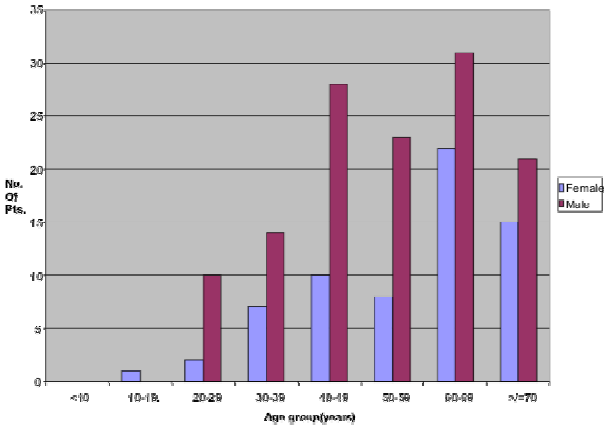

Figure 2: **Annual and Overall Hypertension-Related Admissions, Hypertension- Related Deaths and Case Fatality Rates.**

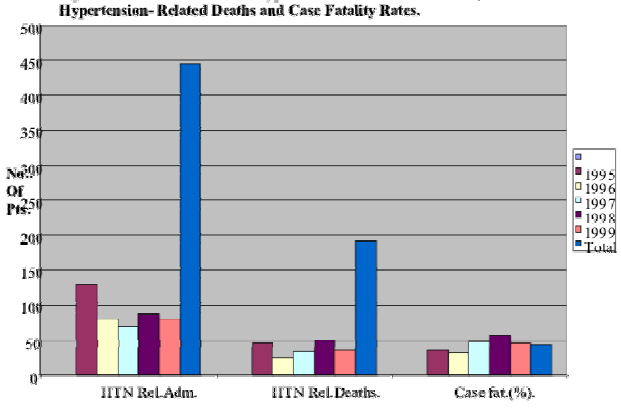

Table 3: **Distribution of Hypertension Related Deaths by Sex and Cause.**

	Sex			Total Deaths
Disorder	**Male**	**Female**	**Ratio**	**Number (%)**
• Cerebrovascular disorder	46	27	1.7:1	73(38.2)
- CVA	44	24	1.8:1	68(35.6)
- MID	02	03	1:1.5	05(2.6)
• Cardiovascular disorder	29	09	3.2:1	38(19.9)
- CCF	26	07	3.7:1	33(17.3)
- MI	02	01	2:1	03(1.3)
- Cardiac arrest	01	01	1:1	02(1.0)
• Renal failure				
- CRF	26	11	2.4:1	37(19.4)
- ARF	23	09	2.6:1	32(16.8)
	03	02	1.5:1	05(2.6)
• Cause of death undocumented	14	07	2:1	21(11)
• Hypertensive Encephalopathy	08	05	1.6:1	13(6.8)
• Diabetic disorder	04	05	1:1.3	09(4.7)
Total	**125**	**64**	**2:1**	**191(100)**

Keys: CVA- Cerebrovascular accident; MID- Multi-infarct dementia; CCF- Congestive Cardiac failure; MI- Myocardiac arrest; CRF- Chronic renal failure; ARF- Acute renal failure.

DISCUSSION

Hypertension is the most prevalent cardiovascular disease not only in Africa but also globally[1]. Its complications are many and include congestive cardiac failure, cerebrovascular disease, chronic renal failure, ischaemic heart disease, among others.

This study showed that hypertension-related disorders accounted for 6.2% of the total medical admissions over the period studied. This value is comparable with findings in Sokoto, North-West Nigeria [3], though lower than 11.2% rate established by the National Expert Committee on Non-communicable diseases[13]. The case fatality of 42.9% found in this study is quite high. Studies from Benin (Nigeria) and Burkina Faso showed rates of 17.7% and 20% respectively [14,15]. The majority of these deaths were in the middle age; and mainly due to avoidable causes. The peak age group at death was 60-69 years for both sexes, showing that a large number of our elderly population could be dying from hypertension and its related complications. The reasons for this may be late presentation to hospital, late referral to appropriate specialist, ignorance and poverty; and inadequate medical care facilities. Cerebrovascular accident, hypertensive encephalopathy, and acute renal failure accounted for 45% of the deaths.

The commonest complications causing death in this study were CVA followed by CCF and CRF (35.6%, 17.3% and 16.8% respectively). This finding agrees with that of Ukoh[14], but appears to differ with what is found in literature, the commonest complications being in the order CCF > CVA >CRF[16].The higher mortality recorded for men is in accordance with known increased morbidity from hypertension associated with male gender [12,17]. Rather uncommon in this review is death from Ischaemic heart disease (IHD), which is a major killer in industrialized countries. IHD in the African remains relatively uncommon although some studies suggest that it is on the increase[7]. However, since autopsy reports on hypertension-related deaths were not reviewed; some complications such as IHD may have been missed.

CONCLUSION

This review has shown that many cases of hypertension-related admissions died from avoidable and treatable causes. Most of the death occurred among the most productive age group. The result of this study, though retrospective, requiring cautious interpretation, however point to the need for prospective work in this area of cardiovascular medicine. A continuing campaign for awareness of systemic hypertension and its complications especially through the mass media cannot be overemphasized.

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