

PREVALENCE AND CLINICAL FEATURES OF ARTERIAL HYPERTENSION IN RUHENGERI DISTRICT HOSPITAL, MUSANZE, RWANDA

Rachna Pande*, Jean Pierre NIYONZIMA**

*Dpt of internal medicine, Musanze district hospital - Ruhengeri Rwanda.

**Intern, Dpt of Internal medicine, Musanze district hospital - Ruhengeri Rwanda.

ABSTRACT

The prevalence of arterial hypertension (AH) varies among countries and within sub-classes of a country. It has been estimated that hypertension accounts for 6% deaths worldwide. Though it is said to be a disease of developed countries, its prevalence is not lower in under-developed countries. Hypertension is a major modifiable risk factor for cardiovascular disease that can, if untreated, result in serious morbidity and mortality from cardiac, cerebrovascular, vascular, and renal diseases [1]. Optimal control of diabetes and hypertension is needed to prevent development of heart failure [2]. Rwanda is one of the most densely populated (344 persons/Sq. km, 2006) [3] under-developed countries in Eastern Africa. This study was undertaken to study the prevalence of hypertension and its clinical presentations, comorbidities and prognosis in the department of internal medicine of the Ruhengeri district hospital.

It was a retrospective study in which records of hospitalized patients for the period of January to June 2008 were studied. Data of patients were collected and analyzed using SPSS (Statistical Package for the Social Sciences) version 11.5 and Epidata. Total number of patients with hypertension was 57 which were 2.53%. Hypertension was more common in women (64.9%), than men (35.1%). The majority of patients had more than 50 years of age (64.9%). The most Common symptom was headache (47.4%), followed by dizziness (36.8%), palpitations (28.1%) and visual disturbances (19.3%), epistaxis (5%), miscellaneous symptoms like loss of consciousness, tinnitus, e.t.c. (59.6%). The majority of patients had severe hypertension (47.4%) and patients over 50 years of age had the highest prevalence of severe hypertension (67%). Alcohol consumption, diabetes mellitus, congestive heart failure had significant association with hypertension. Among the patients studied; 5.26% died during the period of study. The Study revealed that the hypertension prevalence and severity of its effect were more for the patients above 50 years of age, and women were more affected as compared to men. Headache was the most common symptom among patients with hypertension.

Keywords: Rwanda - arterial hypertension - headache - dizziness - heart failure

RESUME

La prévalence de l'hypertension artérielle varie selon les pays et selon les sous-classes de population au sein du même pays. Dans le monde, on estime que 6% des décès sont dus à l'hypertension artérielle. Bien qu'elle soit considérée comme une maladie des pays développés, sa prévalence n'est pas moindre dans les pays en voie de développement. L'hypertension artérielle, non traitée, est un facteur de risque important pour les maladies cardiovasculaires et qui peut causer une grande morbidité et mortalité par des maladies cardiaques, cérébrovasculaires, vasculaires et rénales mais que l'on peut modifier. Une meilleure prise en charge du diabète et de l'hypertension artérielle est indispensable pour la prévention de l'insuffisance cardiaque. Le Rwanda est l'un des pays les plus densément peuplés (344 habitants/km², 2006) des pays sous-développés de l'Afrique de l'Est. Cette étude a été menée pour déterminer la prévalence, les aspects cliniques, les facteurs aggravant ainsi que le pronostic de l'hypertension artérielle au sein de l'hôpital de district de Ruhengeri. Nous avons mené une étude rétrospective dans laquelle les données des patients hospitalisés de Janvier à Juin 2008 ont été revues. L'analyse statistique et la collecte des données ont été faites à l'aide de logiciels SPSS (Statistical Package for the Social Sciences) version 11.5 et Epidata. Le nombre total des patients avec l'hypertension artérielle était 57, soit 2,53% des patients hospitalisés. La prévalence de l'hypertension artérielle était plus élevée chez les femmes (64,9%) que les hommes (35,1%). La plupart des patients avaient plus de 50 ans (64,9%).

Le symptôme le plus fréquent était des céphalées (47,4%), suivi de vertige (36,8%), puis des palpitations (28,1%), les troubles visuels (19,3%), epistaxis (5%), et des symptômes polymorphes comme la perte de connaissance, bourdonnements d'oreilles, etc (59,6%). La plupart des malades avaient une hypertension artérielle sévère (47,4%) et les malades âgés de plus de 50 ans avaient une proportion la plus élevée. L'alcoolisme, le diabète et l'insuffisance cardiaque avaient une association importante avec l'hypertension artérielle. Pendant la période d'étude, 3 malades sont morts, soit un taux de mortalité de 5,26%. Notre étude a révélé que la prévalence de l'hypertension artérielle et la sévérité de ses effets étaient plus élevées pour les patients âgés de plus de 50 ans; les femmes étant plus touchées que les hommes. Les céphalées étaient le symptôme le plus fréquent pour les patients hypertendus.

Mots-clés: Rwanda - Hypertension artérielle - cephalée - vertige - Insuffisance cardiaque.

Introduction

Hypertension is a major modifiable risk factor for cardiovascular, cerebral, renal and peripheral vascular diseases. The prevalence varies among different countries and also within sub-classes of a country. Over 50 million Americans have an elevated blood pressure; 70% are aware of their diagnosis, 50% are receiving treatment

and 25% are under control [4]. It has been estimated that hypertension accounts for 6% deaths worldwide [5]. Of greater concern is the prevalence of hypertension in underdeveloped countries. **Hypertension in Africa is a widespread problem with immense economic importance because of its high prevalence in urban areas, its frequent under diagnosis and the severity of its complications [6].** As per estimate of World Health Organization, more than 30 million persons in Africa have hypertension [6]. There is poor awareness regarding the

Correspondence to: Rachna Pande
Department of internal medicine, Ruhengeri district hospital Musanze Rwanda.

disease among persons due to ignorance, lack of adequate resources regarding the diagnosis and the management of hypertension and its related complications. Growing evidence suggests that hypertension constitutes the basis for cardiovascular disease in Sub-Saharan Africa [7]. These factors may be contributing to hypertension, there may be genetic mutation to next generation. BP has a continuous distribution, multiple genes and multiple environmental factors that determine the level of one's BP [8].

Rwanda is a small country in Eastern Africa where income per capita is less than 1 dollar per day. It is difficult for persons in rural areas to come for treatment into hospitals located some distances away from their homes. Therefore it is important to assess the problem of hypertension and its associated features. Health care providers need to be trained in this regard so that hypertension can be diagnosed and managed at primary care level and complications of uncontrolled hypertension can be avoided.

This study was undertaken to assess the prevalence of hypertension among hospitalized patients in the department of internal medicine of the Ruhengeri District hospital.

Objectives

- To determine the prevalence of hypertension in hospitalized patients in the department of internal medicine of the Ruhengeri district hospital.
- To identify the clinical features associated with hypertension.
- To determine the comorbidities associated with hypertension.
- To assess the causes for hypertension.

Materials & methods

It was a retrospective study of records of patients hospitalized for arterial hypertension (AH) in the department of internal medicine from 1st January to 30th June 2008. Data were obtained as per a pre decided questionnaire. The data were recorded using a Microsoft excel and Microsoft word. The SPSS version 11.5 and EpiData were used to carry out the descriptive statistics.

Results & discussion

The prevalence of hypertension in hospitalized patients in the department of internal medicine was 2.53% in this study. This was lower than that found by Twagirumukiza, (4.7%) at BUTH (Butare university teaching hospital) [8], because BUTH is a referral hospital where cases of hypertension would be referred from other hospitals for further investigations and treatment, hence the higher

number of cases. In USA, based on results of NHANES (National Health and Nutrition Examination Survey), it is 28.7% of Americans [5]. The difference in prevalence is explained by differences in awareness among persons regarding hypertension, and both among patients and health care providers. There could be variation in results also because of the variation in sample size and the type of study.

Table1. Socio-demographic characteristics of patients

Characteristics	Frequency	Percentage
Age		
<30	5	8.8
30-50	15	26.3
>50	37	64.9
Identification		
Sex		
Male	20	35.1
Female	37	64.9
Profession		
Civil servant	2	3.5
Businessman	3	5.3
Peasant	51	89.5
Student	1	1.8
Family history of hypertension	17	29.8
Personal habits		
Alcohol	34	59.6
Tobacco	19	33.3
Others(tobacco chewing, drugs)	8	14

The maximum number of cases were seen in the age group superior to 50 years (64.9%). AH rises with age [4]. Due to multiple factors, AH is related to age. More females were affected (64.9%) than males (35.1%). This is similar to other studies conducted. After menopause, women are more prone to AH as compared to men due to withdrawal of protective effect of estrogen. But in a study conducted in Ethiopia, men were more affected (31.1%) compared to women (28.5%) [9]. Rwanda, being a predominantly agriculture based society (90%), the majority of patients coming to Ruhengeri hospital are peasants, therefore regarding occupation of the patients, majority of patients (89.5%) were peasants. 29.8% had a history of hypertension in their family. The figure 1 could be attributed to the fact that there is lack of awareness about hypertension in the public and therefore people would not be knowing about the presence of AH in any family member. Alcohol consumption was seen in 59.6% and 33.3% of patients had history of smoking. Both these are risk factors for AH as well as for cardiovascular diseases.

All patients under 30 years had uncontrolled blood pressure (fig.1), probably because of unawareness of medical care providers regarding the hypertension in young adults and the lack of reliance of patients to the diet restriction and to the therapy.

90% of patients with more than 50 years had mild hypertension, while severe hypertension was seen in 66.7%. Advanced age is known to be a risk factor for hypertension.

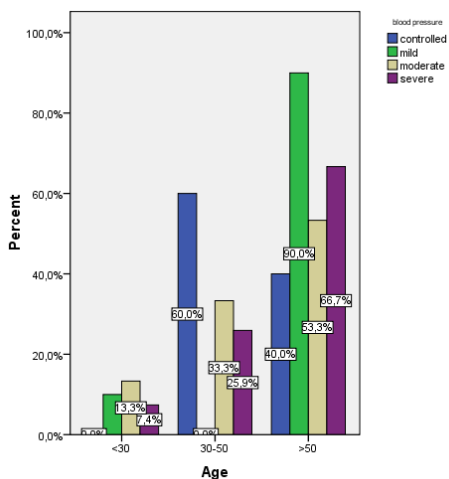


Figure 1 Diagram representing different stages of hypertension among the population study

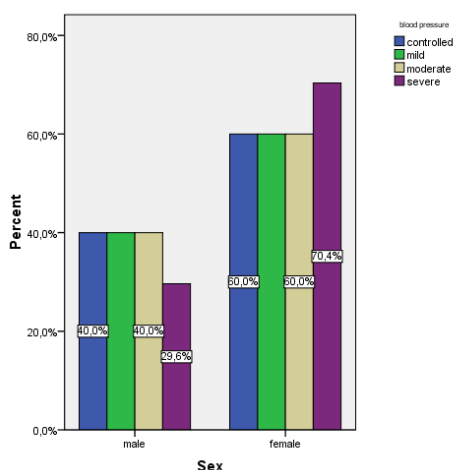


Figure 2- Diagram representing different stages of hypertension, gender wise

The prevalence of controlled blood pressure, mild and moderate hypertension was the same in both males and females (40% and 60% respectively). Severe hypertension was seen more in females (70.4%) than males (29.6%); because women are more prone to AH after menopause, and they tend to be negligent towards their health, seeking treatment only when facing serious problem.

Headache was the most common symptom (47.4%), followed by dizziness (36.8%), palpitations (28.1%) and visual disturbances (19.3%). 50.8% of patients had miscellaneous symptoms like loss of consciousness, dyspnea, tinnitus. Pedal edema was the most common physical sign (19.3%), hepatomegaly in 15.8% patients, while 29.3% of patients had signs of pulmonary edema and neurological dysfunction. About 47.4% patients had severe hypertension.

Table 2 – Clinical features of patients

Clinical Features	Frequency	Percentage
Headache	27	47.4
Dizziness	21	36.8
Palpitations	16	28.1
Visual disturbances	11	19.3
Miscellaneous (loss of consciousness, dyspnea, tinnitus)	29	50.8
Epistaxis	5	8
Pulse		
<60	0	0
60-100	49	86
>100	8	14
Blood pressure		
Normal	5	8.8
Mild H.T.	10	17.5
Moderate H.T.	15	26.3
Severe H.T.	27	47.4
Hepatomegaly	9	15.8
Pedal edema	11	19.3
Pulmonary edema and neurological dysfunction	17	29.3
Diabetes mellitus	6	10.5
CRF	4	7
CHF	6	10.5
Miscellaneous	5	8.8

Diabetes mellitus and chronic heart failure were the most common comorbidities.

There were 3 deaths (5.26%) recorded due to unspecified causes.

Table3. Association between HT, comorbidities and different conditions

Condition	Diabetes mellitus	Chronic renal failure	Chronic heart failure
Personal habits			
Alcohol intake	2 (3.5%)	4 (7.0%)	1 (1.8%)
Tobacco smoking	0 (0%)	2 (3.5%)	1 (1.8%)
Other habits	1 (1.8%)	1 (1.8%)	1 (1.8%)
Family antecedents			
History of hypertension	1 (1.8%)	1 (1.8%)	1 (1.8%)
Symptoms & Signs			
Headache	2 (3.5%)	1 (1.8%)	0 (0%)
Dizziness		1 (1.8%)	0 (0%)
Palpitations	0 (0%)	1 (1.8%)	2 (3.5%)
Visual disturbances	1 (1.8%)	1 (1.8%)	0 (0%)
Epistaxis	3 (5.3%)	0 (0%)	2 (3.5%)
Other symptoms	4 (7%)	2 (3.5%)	4 (7%)
Pulse			
<60	0 (0%)	0 (0%)	0 (0%)
60-100	6 (10.5%)	4 (7.0%)	5 (8.8%)
>100	0 (0%)	0 (0%)	1 (1.8%)
Blood pressure			
Controlled	3 (5.3%)	0 (0%)	0 (0%)
Uncontrolled Mild	0 (0%)	2 (3.5%)	2 (3.5%)
Mild	1 (1.8%)	1 (1.8%)	4 (7.0%)
Moderate	2 (3.5%)	1 (1.8%)	0 (0%)
Hepatomegaly	0 (0%)	2 (3.5%)	3 (5.3%)
Pedal edema	0 (0%)	1 (1.8%)	2 (3.5%)
Other signs	2 (3.5%)	1 (1.8%)	3 (5.3%)

Investigations were done in only 25% of patients. The cost of tests and the distance were limiting factors. Blood glucose was the most common investigation performed, followed by serum creatinine and blood urea nitrogen level. Blood glucose and serum creatinine levels were high in 11 patients. Chest X-ray was done only in 4 cases with only 1 abnormal case.

Table 4. Tests Investigations

Investigations	Number of cases	Normal	High
Blood urea	14	8	6
Serum Creatinine	15	4	11
Serum Glucose	28	17	11
Chest x-ray	4	3	1

Table 5. Association between blood pressure and various risk factors of the study.

Risk factor	P value
Alcohol consumption	0.007
Tobacco smoking	0.132
Others(tobacco chewing, drugs)	0.342
Diabetes mellitus	0.020
Chronic renal failure	0.313
Chronic heart failure	0.031

Alcohol consumption was the most important risk factor, followed by Diabetes mellitus and chronic heart failure. This is due to the culture of taking a locally brewed sorghum beer, "Ikigage" and banana beer, "Urwagwa", (4.8% alcohol) and also other kinds of alcohol. Alcohol is an important risk factor for hypertension. A significant effect of complete abstinence on both Systolic blood pressure and diastolic blood pressure was observed during a study period of 12 weeks, when compared to any drinking: Baros et al [10].

Possible risk factors for AH in Rwanda

In a hospital where the majority of patients are poor farmers who do many physical activities and walk long distances; surprisingly many cases of hypertension were discovered. The majority of patients coming to the hospital are rural peasants; in fact, they are not obese and walk much. Thus, the 2 risk factors for hypertension, i.e. obesity and lack of physical activity do not apply to them. According to Rwanda demographic health survey 2000, 9% of women between 15 to 49 years-old were malnourished (basal metabolic index < 8.5) [11]. In the study we find a higher prevalence of hypertension among women, lack of physical activity is certainly not contributory.

Possible reasons for hypertension are:

- **Race – Hypertension is said to be more common in blacks than whites. African Americans are more likely to have high blood pressure than white Americans.** In a study by David J. Hyman et al; it has been shown that hypertension is a strong contributor to hazards of cardiovascular disease in black Africans with odds ratio of 7 versus 2.3 to 3.9 in other ethnic groups [12]. The difference in prevalence of hypertension between different racial groups is explained by the difference of the environment among groups, e.g. socio-economic status. **The relation between socioeconomic status and hypertension is well established [13] as is the racial variation in socioeconomic status [14].**

- Intake of alcohol - Alcohol is an established risk factor for hypertension. As stated above, there is traditional and culturally acceptable intake of locally brewed beer, and other types of alcohol which leads to intake of alcohol by large number of the population from an early age; thus resulting in hypertension and other complications of alcoholism.

- Mental stress - In a society recovering from the 1994 Genocide just 17 years ago, there is a lot of stress in the population. Rwanda records the highest level of post traumatic stress disorders, as compared to other countries in the region [15] which is most probably due to the genocide. Lack of family support, physical and emotional support are other factors contributing to mental stress.

- Ignorance and lack of awareness about hypertension – this factor needs to be corrected by an extensive public sensitization about hypertension, to avoid risk factors for hypertension. Increased awareness also has to be generated among health care providers regarding risk factors, diagnosis and management of hypertension.

- Genetic - Hypertension is due to interplay of multiple genetic and environmental factors. Thus, once developed, it may pass on to subsequent generations.

Data on height and weight of majority of patients was not available, hence not considered in statistical analysis. Load of patients, scarcity of adequate staff and ignorance regarding importance of this measurement are the likely reasons due to lack of investigative health facilities; the serum lipid levels of patients could not be done. Even available tests could not be done on all patients regarding the long distance to run and lack of money to pay for those tests.

Furthermore researches are needed over a greater number of persons at a community level to establish these factors to be causing high blood pressure in Rwanda. Patients coming into hospital would be the tip of iceberg with many more undetected cases in the community. Apart from this, the concerned figures in this study are from patients of the internal medicine department only. Other cases of hypertension coming from surgery or obstetrics

&gynecology departments were not documented.

Conclusion

The Frequency of hypertension in the department of internal medicine of the Ruhengeri hospital was 2.53%. It is lower than the worldwide estimated frequency. This is due to lack of awareness among persons regarding hypertension and lack of study of prevalence at community level.

Most patients were women above 50 years-old; and 90% of patients were cultivators. the most Common symptom was headache (47.4%), followed by dizziness (36.8%) and palpitations (28.1%). Diabetes mellitus and congestive heart failure were the most common comorbidities. The majority of patients had severe hypertension when first evaluated.

Alcohol consumption was the most significant risk factor for arterial hypertension.

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Recommendations

Based on this study, the following recommendations could be stated:

- A study of hypertension should be carried out in the entire country at small scale so that the exact prevalence of hypertension could be known.
- The population should be sensitized about hypertension and prevention of its risk factors like alcohol, mental stress, e.t.c..
- Health care providers in hospitals should be trained on the importance of maintaining records of height and weight of patients; particularly those with diabetes and hypertension.
- Health care providers at primary care level should also be trained regarding the arterial hypertension, so that they can detect and manage high blood pressure before transferring patients to hospital. This will prevent the long distance run, thus improving the compliance of patients; helping better the control of blood pressure.