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Case Report

Analysis of Blood Pressure Variability in Hypertensive Patients Admitted to the Neurology Department of the Ignace-Deen National Hospital (HNID)

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Abstract

Introduction: Hypertension is currently recognized as a public health problem worldwide, therefore blood pressure variability would be a risk factor for cardiovascular events. The objective of this study was to contribute to the study of blood pressure variability in hypertensive patients admitted to the neurology department of the HNID

Methodology: This is a prospective, longitudinal analytical-type study lasting 6 months. We conducted an exhaustive recruitment of all hypertensive patients admitted to the neurology department of HNID. Patients admitted for high blood pressure and its complications regardless of age and sex and who agreed to participate in this study were included.

Results: 161 patients were hospitalized in our department for various pathologies, 38 of them presented a blood pressure variability, i.e. a frequency of 23.60%. The mean age was 61.68 years with extremes of 20 and 80 years and an F/H sex ratio of 1.23. The factors tested were sociodemographic characteristics (occupation), vomiting, meningeal involvement, and antihypertensive therapies were statistically significant factors associated with APV with respectively (p = 0.0001, p=0.0204, P = 0.0001, p = 0.0004). Conclusion: The present study highlights a VPA significantly related to occupation, vomiting and triple antihypertensive therapy.

Keywords: Blood Pressure Variability; Hypertension; Neurology Department of the HNID

Case Report

Hypertension (hypertension) is defined according to the WHO as the permanent existence of a systolic blood pressure (SBP) greater than or equal to 140mmHg and/or a diastolic blood pressure (DBP) greater than or equal to 90mmHg in the absence of any antihypertensive treatment [1,2]. Blood pressure variability is defined as the standard deviation from the mean of measurements made during a study. It is considered to be the result of the complex interaction between several mechanisms including cardiac and vascular effects induced by the autonomic nervous system via cardiopulmonary receptors and hormone and peptide receptors [3,4]. But from an epidemiological point of view, hypertension affects more than a billion people worldwide, i.e. more than a quarter of the world's population, with a rate of 26.5% in 2000. And this proportion is expected to reach 29% in 2025 [5]. In Burkina Faso, Yameogo et al. estimate the prevalence of hypertension at 30% [5]. In Guinea, Kaba et al. reported a frequency of 56.5% in a prospective study carried out in a cardiology setting at the Ignace-Deen University Hospital in Conakry in 2008, of which 55% was kidney

damage [6]. The precise and simple evaluation of blood pressure variability is essential in the prevention and monitoring of pathologies such as arterial hypertension or various disorders of the autonomic nervous system [7]. The first indicator of variability is therefore the dispersion of values around the mean [8]. Elevated VPA is identified as a predictor of the occurrence of CV events of kidney disease [9]. And cognitive disorders [10]. Therefore, high blood pressure variability increases the risk of stroke and coronary events and is also a risk factor for cardiovascular complications in the elderly. [11,12]. The diagnostic difficulties, and the management of blood pressure variability, which are among other things, which aimed to contribute to the study of blood pressure variability in hypertensive patients in the neurology department.

Patients and Methods

The neurology department of the Ignace-Deen National Hospital served as the setting for our study. Patients admitted for high blood pressure and its complications regardless of age and sex who agreed to participate in this study were included in this study. All patients admitted with hypertension who did not have blood pressure variability and who did not agree to participate in the study were excluded. Our variables were sociodemographic, clinical and paraclinical. Our data was entered into Word and Excel from the 2007 office package and analysed with epi-Info.7. For the comparison of our statistical proportions we used the chi-square and student's statistical tests. The significance threshold was set at $p \leq 0.05$.

Results

Out of 161 hospitalized patients, 23.6% had blood pressure variability.

Female sex was frequent, i.e. 55.26% compared to 44.74% of men with a sex ratio of 1.23.

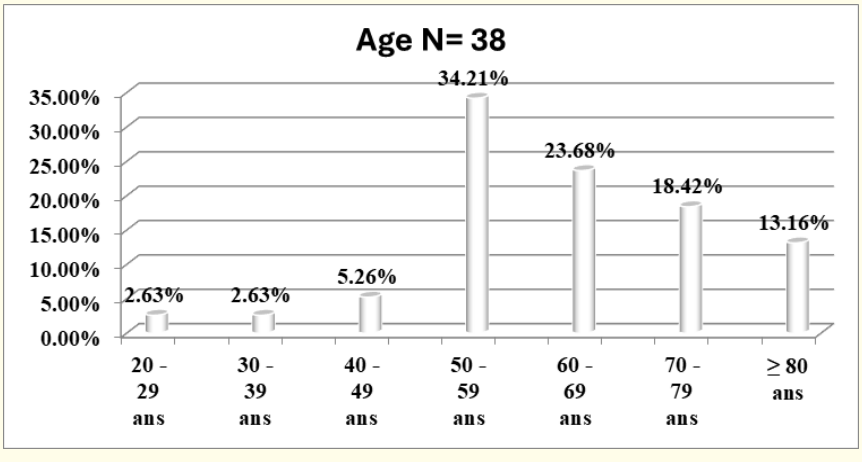

Figure 1: Age distribution of patients

Reasons for consultation	Frequency	%
Headache	21	55,26
Language disorder	18	47,36
Vomit	7	18,42
Dizziness	6	15,79
Visual disturbances	3	7,89
Psychomotor agitation	3	7,89
Tinnitus	1	2,63
Other	9	23,68

Table 1: Distribution by reason for patient consultation.

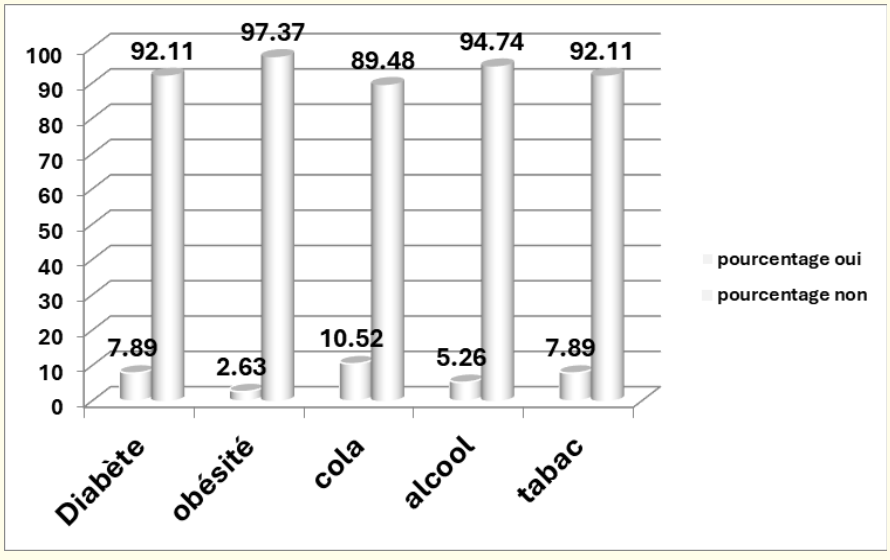

Figure 2: Frequency of patients according to terrain and vices.

Biology	Frequency	Results	%
LDL	12	High	31,58
HDL	5	High	13,16
GE	23	Positive	60,52
Triglycerides	7	High	18,42
Glycemia	7	High	18,42
VS	4	High	10,52
Urea	12	High	31,58
Creatinine	14	High	36,84
Calcium	2	High	5,26
ASLO	16	Positive	42,10
CRP	15	Positive	39,47
TxHgb	20	Low	52,63

Table 2: Frequency of patients according to blood work.

ECG Results	Frequency	%
HVG	23	60,52
Sinus bradycardia	2	5,26
Normal	9	23,68
Not done	4	10,52
Total	38	100

Table 3: Patients by ECG results.

Diagnostic	Frequency	%
Hemorrhagic stroke	14	36,84
Ischemic stroke	21	55,26
Spinal Cord Compression	3	7,89
Total	38	100,00

Table 4: Distribution of Patients by Diagnosis.

Molecules Frequency %
Diuretic 25 65.79
IEC 25 65.79
Calcium channel blocker 7 18.42
Dual therapy 8 21.05
Triple therapy 3 7.89

Table 5: Patients by molecule used for hypertension treatment.

Variables		Blood Pressure Variability		P value
Antihypertenseur	Long-term	Medium term	Short-term	
Diuretic				
Yes	0	24	1	
IEC				
Yes	0	22	3	
IC				
Yes	0	6	1	
ACE+Diuretic				
Yes	0	8	0	
ACE+Diuretic+IC				
Yes	0	2	1	
				0,0004

Table 6: Correlation between Variability and the Effect of Antihypertensive Drugs on Blood pressure variability.

Discussion

During our study, 161 patients were hospitalized. Among them, 38 of them showed a blood pressure variability, i.e. a frequency of 23.60%. The mean age was 61.68 years with extremes of 20 and 80 years. Our result can be superimposed on that of C. Mounier-Véhier., *et al*. [13] In France in a study of 54 patients who had an average age of 45 ± 10 years. This is likely due to the variability in blood pressure that increases with age and vascular aging. Female sex was predominant in our study, with a sex ratio (F/M) of 1.23. According to the literature, the variability of BP is greater in women than in men due to their conditions and activities in the home. 55.26% of our patients consulted for headaches, followed by 47.36% for language disorders. Vomiting, dizziness and visual disturbances were other reasons for consultations were 18.24%,

15.79% and 7.89% respectively. We found cola as the most frequent vice with 4 cases or 10.52%, followed by diabetes and tobacco which each have 3 cases or 7.89%. These results are close to those found by ELRIC HAUDIQUET in his thesis in 2015 [13]. In France, which reported 396 patients, of whom 133 had end-organ involvement, i.e. 33.58%, 29 were smokers, i.e. 7.32%, and 68 were diabetic, i.e. 17.17%. Risk factors may vary depending on the study and the country. The blood tests carried out on our patients revealed 60.52c/o, of positive thick gout, 52.63c/o of anemia, followed by 36.84c/o of kidney failure, 31.58% hyperuremia, 18.42% hyperglycemia, These results are superimposed on the one found by Aliou Sangaré in his doctoral thesis in 2010 [14]. In Bamako, which found an increase in serum creatinine to 51.9% and 6.5% kidney failure. This could explain the fact that hypertension is the cause and risk factor of kidney failure and vice versa. The electrocardiogram performed showed 60.52% of LVH followed by 5.26% of sinus bradycardia, only 10.52% did not do their ECG. This result is similar to the one found by Aliou Sangaré in his doctoral thesis in 2010 [14]. In Bamako, 72.3% of left ventricular hypertrophy was electrically occurring, with 67.7% of patients having a peak count greater than 3%. This could be explained by the chronic course of hypertension and the lack of control of blood pressure. The diagnoses of Ischemic stroke were 55.26% followed by hemorrhagic stroke 36.84% and 3 patients had spinal cord compression (7.89%). These results are comparable to those of BAH M. in his doctoral thesis in 2017 [14]. The neurology department of the HNID (Guinea) had found a predominance of ischemic strokes with 88.89% against 11.11% of hemorrhagic strokes. In our study, 25 patients (65.79%) were on diuretics and ACE inhibitors, 7 patients (18.42%) were on HF. Our results are different from a meta-analysis of the literature which says that the most commonly used antihypertensive drugs are IC and Diuretic. The most beneficial antihypertensive treatments were IC and diuretics. Our result is similar to that of Prof. Rothwell. Frederick. GUITARD reports in this work that HF treatment decreased the variability of BP out of 29 (76.31%) had a favorable evolution followed by 5 (13.50%) discharged against medical advice and 4 (10.52%) had died.

Conclusion

Blood pressure variability was confirmed by repeated BP (MAPA) doses, which showed a significant link between blood pressure variability and meningeal series involvement, occupation, reasons for consultation and antihypertensive treatment. We could not show a link between blood pressure variability and the presence of kidney damage. The most beneficial treatment in terms of reducing blood pressure variability was triple antihypertensive therapy. This study provides a database for future studies on blood pressure variability, and higher-powered prospective studies are needed to confirm the link between VPA and the associated factors for which the test was statistically significant.

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