

Clinical and Therapeutic Evaluation of Hypertensives According to the Practice of Ambulatory Blood Pressure Measurement (ABPM) at the Bel Air International Clinic in Conakry from January 1, 2019 to November 30, 2022

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Abstract

Introduction: Ambulatory Blood Pressure Measurement (ABPM) is a non-invasive examination recommended for subjects at high cardiovascular risk, and those requiring a nocturnal drop in BP such as elderly and obese subjects, those with secondary hypertension or resistant, diabetics, subjects with metabolic syndrome or sleep apnea syndrome. The objective of this study was to evaluate the contribution of ABPM in the diagnosis and evaluation of the level of control of hypertension under treatment at the Bel Air international clinic. **Materials and Methods:** This is a retrospective, cross-sectional and descriptive study, carried out at the Bel Air International Clinic in Conakry (Guinea) between January 2019 and November 30, 2022. It included a consecutive series of 180 consenting patients recruited through an ambulatory measurement of 24-hour blood pressure from a FUGADA brand device. **Results:** We collected 180 patients, with a male predominance (sex-ratio M/F = 2.46). The mean age of the patients was 48.48 ± 14.23 years. The most represented age group was that of 32 to 42 years with 50 cases (27.8%) fol-



lowed by that of 43 to 52 years with 42 cases or 23.3%. The indication was for diagnostic purposes in 106 cases 58.9%, the therapeutic evaluation in 58 patients (32.2%). The examination was prescribed by a cardiologist in 98 cases (54.4%), a general practitioner in 71 cases (39.4%), a neurologist in 11 cases (6.1%). In the therapeutic evaluation, high blood pressure was controlled in 24 patients (13.3%) and uncontrolled in 34 cases (18.9%). In the diagnostic indication, high blood pressure was confirmed in 79 cases (43.9%) with a statistically significant link ($\text{Chi}^2 = 4.57$ and $p\text{-value} = 0.032$). The nycthemeral mean was 187.27 ± 26.22 mmHg for systolic blood pressure (SBP) and 110.37 ± 19.06 mmHg for diastolic blood pressure (DBP), during the day, 151.64 ± 21.45 mmHg for SBP and 71.59 ± 8.67 mmHg for diastolic blood pressure. During the study 65 patients (36.1%) were identified as dippers and 115 patients (63.9%) were no-dipping. The antihypertensive protocol used was monotherapy in 68 cases (37.8%), dual therapy in 46 cases (25.6%), triple therapy in 17 cases (9.4%). However 39 patients or 21.7% were not taking any antihypertensive. **Conclusion:** This preliminary study, despite the modest sample size, showed the importance of ABPM as a tool for diagnosis, monitoring of hypertensive patients and therapeutic adaptation. A large-scale national study would be necessary for the rational use of ambulatory blood pressure measurement in our context in order to improve the management of hypertensive patients.

Keywords

Ambulatory Blood Pressure Measurement, Guinea

1. Introduction

Ambulatory Blood Pressure Measurement (ABPM), a no-invasive technique, is a method of measuring blood pressure (BP) which establishes a good correlation between the level of BP figures and target organ damage, the risk of cardiovascular disease, and the long-term prognosis of patients, unlike conventional clinical measurements [1]. This is an examination recommended for subjects at high cardiovascular risk, and those requiring a nocturnal drop in BP such as elderly and obese subjects, those with secondary or resistant hypertension, diabetics, subjects with metabolic syndrome or sleep apnea syndrome [1] [2]. In Sub-Saharan Africa, few works based on ABPM have been reported [2]. Available epidemiological data show highly variable prevalence rates from one country to another [3]. In Congo, the prevalence of high blood pressure was estimated at 32.5% in Brazzaville. In Ivory Coast high blood pressure is a real public health problem with a prevalence of about 20% [4].

In Senegal, the high blood pressure population was 23.3% in 2014 [5]. In Guinea, a prospective survey, carried out on a cohort of 669 volunteer subjects including 395 women, indicated a high overall prevalence of 29% in the prefectures of Forecariah, Fria and Boké [6]. Thus the aim of this study was to evaluate the contribution of ABPM in the diagnosis and therapeutic monitoring of

hypertensive patients at the Bel Air International Clinic.

2. Materials and Methods

This is a retrospective, cross-sectional and descriptive study, carried out at the Bel Air International Clinic in Conakry (Guinea) between January 2019 and November 30, 2022. It included a consecutive series of 180 consenting patients recruited through an ambulatory measurement of 24-hour blood pressure from a FUGADA brand device, either for diagnostic purposes of hypertension, or for therapeutic purposes (treatment assessment). We used Cardiosoft 6.51 software from GE Health Care for data recording and analysis, respectively. The thresholds of normality set were blood pressure (BP) < 130/80 mmHg for 24-hour averages; PA < 135/85 mmHg for daytime averages (7 a.m. - 10 p.m.); PA < 125/80 mmHg for nocturnal averages (10 p.m. to 7 a.m.). The threshold used for confirming the diagnosis of hypertension was a blood pressure over 135/85 mmHg for the diurnal averages. High blood pressure was considered to be controlled for BP < 130/80 mmHg over the entire 24-hour average. We studied the type of systolic, diastolic or systolic-diastolic high blood pressure. No dipping were defined as those whose nighttime pressure drop from daytime averages was less than 10%, or who had a nighttime rise in blood pressure.

The variables studied were: socio-demographic (age, sex, level of education, standard of living); the indication of the ABPM; the nature of the prescribing physician; Blood pressure averages (24 h, daytime, nighttime); the antihypertensive protocol used, and the therapeutic class used. The level of education included four modalities (primary, secondary, higher, none). The data, presented in the form of ratio for the qualitative variable, means \pm standard deviations for the quantitative variables, were processed and analyzed with the Epi-Info 7.2.3.1 software.

For comparisons, we used the Chi-square test. The significance threshold was set at $p < 5\%$.

3. Results

We collected 180 patients, with a male predominance (sex-ratio M/F = 2.46). The average age of patients was 48.48 ± 14.23 years with extreme range (23.3%). The majority of patients 150 cases (83.3%) resided in Conakry. Patients with a level of education represented 78.9% (142 cases) those with no schooling represented 21.1%. The indication was for diagnostic purposes in 106 cases (58.9%), the therapeutic evaluation in 58 patients (32.2%). The examination was prescribed by a cardiologist in 98 cases (54.4%), a general practitioner in 71 cases (39.4%), a neurologist in 11 cases (6.1%). The majority of ABPM had been prescribed in 2020, either 41.7% (75 cases) followed by 2022 in 36.1% (65 cases). In the therapeutic evaluation, high blood pressure was controlled in 24 patients (13.3%) and uncontrolled in 34 cases (18.9%). In the diagnostic indication, high blood pressure was confirmed in 79 cases (43.9%) with a statistically significant link ($\text{Chi}^2 = 4.57$ and $p\text{-value} = 0.032$). White coat high blood pressure was

found in 15% of cases. The nycthemeral mean was 187.27 ± 26.22 mmHg for systolic blood pressure (SBP) and 110.37 ± 19.06 mmHg for diastolic blood pressure (DBP), during the day, 151.64 ± 21.45 mmHg for SBP and 71.59 ± 8.67 mmHg for diastolic blood pressure. The antihypertensive protocol used was monotherapy in 68 cases (37.8%), dual therapy in 46 cases (25.6%), triple therapy in 17 cases (9.4%). However 39 patients or 21.7% were not taking any antihypertensive. During the study 65 patients (36.1%) were identified as dippers and 115 patients (63.9%) were no-dipping (**Table 1**).

Table 1. Characteristics of the study population.

Patient characteristics	Number	Percentage
Sex		
Female	52	28.9
Male	128	71.1
Sex ratio H/F = 2.46		
Résidence		
Conakry	150	83.3
Outside Conakry	30	16.7
Level education		
Unschoolled	38	21.1
Schooled	142	78.9
Indication		
Therapeutic assessment	58	32.2
For diagnostic purposes	106	58.9
Hypertension white coat	27	15
Labile hypertension	15	8.3
Assessment of hypertension and diabetes	11	6.1
Prescriber		
Cardiologist	98	54.4
General practionner	71	39.4
Neurologist	11	6.1
Treatment protocole		
Without treatment	39	21.7
Bithérapie	46	25.6
Monothérapie	68	37.8
Triple therapy	17	9.4
Dipping		
Dippers	65	36.1
No dippers	115	63.9

4. Discussion

The male predominance of this study is comparable to that of Stéphane Méo Ikama *et al.* in Congo Brazzaville who had reported 55% of men [2]. The average age of our study is comparable to that of Aw F *et al.* in Senegal in 2020 who noted an average age of 53.22 years [7]. ABPM was prescribed by a cardiologist in 54.4%, the same observation made by a study carried out in Ivory-Coast since 2007. This therefore demonstrates the need to popularize this technique among general practitioners and other specialists in charge of patients day-to-day hypertensives [8].

In sub-Saharan Africa, low levels of high blood pressure control are alarming [9]. The indication for diagnosis reported in our study is comparable to that of a study carried out in Ivory Coast [8] where the indication for diagnosis of high blood pressure occupied the first place with a percentage of 81.4. However, white coat hypertension was found in 15% of cases, on the other hand in Brazzaville 25% of patients with suspected blood pressure had a normal blood pressure profile [10]. Indeed, the current recommendations of learned societies place particular emphasis on the importance of measurements outside the office, *i.e.* self-measurement of blood pressure and ABPM in the management of hypertensive patients both for diagnostic and therapeutic purposes [2] [11]. In this work, the proportion of no-dipping subjects was higher than that of a Senegalese study carried out in 2020 where the proportion of “no-dipping” subjects over the entire population was estimated at 54.10% [7].

5. Conclusions

This preliminary study, despite the modest sample size, showed the importance of ABPM as a tool for diagnosis, monitoring of hypertensive patients and therapeutic adaptation.

A large-scale national study would be necessary for the rational use of ambulatory blood pressure measurement in our context in order to improve the management of hypertensive patients.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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