

Orthostatic Hypotension (OH) in a Population of Hypertensive Patients in the University Hospital Gabriel Touré (UH GT)

Bâ Hamidou Oumar¹, Menta Ichaka¹, Sangaré Ibrahima¹, Sidibé Noumou¹, Diall Ilo Bella², Coulibaly Souleymane², Daou Adama³, Sogodogo Adama¹, Touré Mamadou¹, Traoré Aladji¹, Djiguiba Youssouf¹, Sanogo Kassoum Mamourou¹

¹University Hospital “Gabriel Touré”, Cardiology, Bamako (Mali)

²University Hospital “Point G”, Cardiology, Bamako (Mali)

³National support centre for fight against disease, Bamako (Mali)

Email address:

bhamiba@yahoo.fr (B. H. Oumar)

To cite this article:

Bâ Hamidou Oumar, Menta Ichaka, Sangaré Ibrahima, Sidibé Noumou, Diall Ilo Bella, Coulibaly Souleymane, Daou Adama, Sogodogo Adama, Touré Mamadou, Traoré Aladji, Djiguiba Youssouf, Sanogo Kassoum Mamourou. Orthostatic Hypotension (OH) in a Population of Hypertensive Patients in the University Hospital Gabriel Touré (UH GT). *Clinical Medicine Research*. Vol. 4, No. 4, 2015, pp. 116-119. doi: 10.11648/j.cmcr.20150404.15

Abstract: Objective: This study was intended to determine the prevalence of HO and characteristics of patients who had an OH. Methodology: The study was cross-sectional, conducted in the cardiology department of the UH GT from January to June 2013 in a population of known hypertensive patients aged over 15 years seen as outpatients and who agreed to participate in the study. OH and NonOH were used to name patients with and without OH. OH was looked up to 5 min. The analysis was performed with SPSS software. Results: The overall prevalence of OH was 31.8% Age, SBP, DBP and HR were lower for NonHO patients resp. $p = 0.004$, <0.0001 <0.0001 and 0.016 . The female sex had a low predictive value compared to male (OR 0.594 and $p = 0.011$). The OR for the occurrence of OH versus the age group ≥ 60 years were 1.974, 2.616 and 1.692 respectively for ages < 30 , 30-44 and 45-59 years ($p = 0.004$). The OR for the occurrence of OH versus compared to higher education level were 0,411, 0,326 et 0,716 ($p=0,049$) resp. for unschooled, primary and secondary level. Conclusion: OH is frequent in the hypertensive population with nearly a third of patients. His research must be extended up to 5 minutes.

Keywords: Hypertension, Orthostatic Hypotension, Cardiology, Bamako

1. Introduction

HO is defined by a fall of the blood pressure (BP) at the time of the passage in upright posture. The values selected are of 20 mmHg for the systolic blood pressure (SBP) and of 10 mmHg for the diastolic blood pressure (DBP) or an absolute value of SBP less than 80 mmHg in upright position [1-3]. In addition to unpleasant for the patients [4-5], she should be more frequent among hypertensive patients [6-7] and is considered as cardiovascular risk factor (CV RF) [8-10].

Most studies were carried out by seeking up to 3 minutes, moreover little is published about OH in the neighboring countries [11].

This study thus aimed to determine OH prevalence and characteristics of patients with OH.

2. Methodology

It was a cross-sectional study, carried out in the cardiology department of UH GT from January to June 2013.

All hypertensive patients of more than 15 years old, seen in ambulatorium and willing to participate in the study were included (Diagram 1). Approximately 8,9% of the patients were not included either because having made a stroke or because unable to stay upright without support.

The basic BP was obtained from the average of 2 measurements at rest, patient lying on his, then 4 measurements were successively carried out immediately after the upstanding, at 1,3 and 5 minutes in standing position. Measurements were carried out with an automatic BP-device of Hartmann model “Tensoval Comfort”.

The definition retained for OH was the fall of SBP of more than 20 mmHg and/or of DBP of more than 10 mmHg.

For the analysis 2 groups were formed: those with OH and those without resp. called OH and NonOH.

Data were collected on a formulary then inputted in a Microsoft Access 2007 Database designed for this purpose.

The analysis was carried out with software SPSS v 12 after initial treatment with Microsoft Excel 2007.

After a descriptive analysis of the sample, the cross tables made it possible to evaluate the prevalence of HO according to several variables and a logistic regression carried out for the categorical variables.

For the continuous variables, a variance analysis with post-hoc test was carried out to study associations between occurrence of the OH and various variables of the sample.

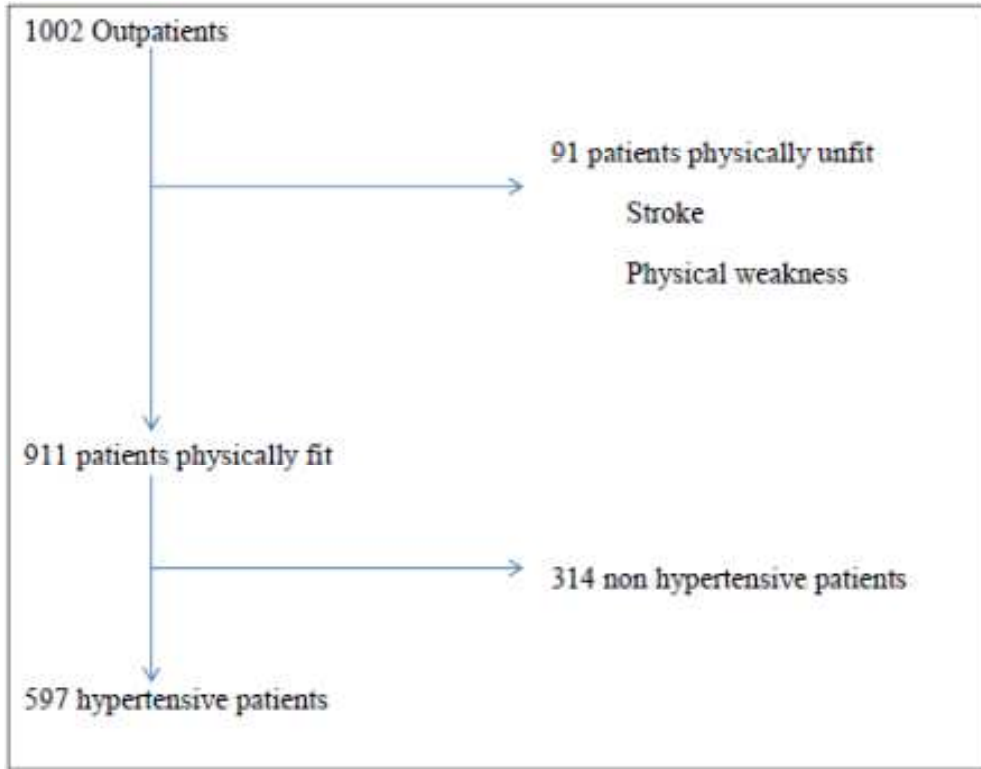


Figure 1. patients' selection for the study.

3. Results

The study involved 597 patients (374 of female sex, sex-ratio Men:Women=0.59), with a mean age of 54,15 ± 13,542 years.

The overall prevalence of OH was 31,8% (Diagram 2).

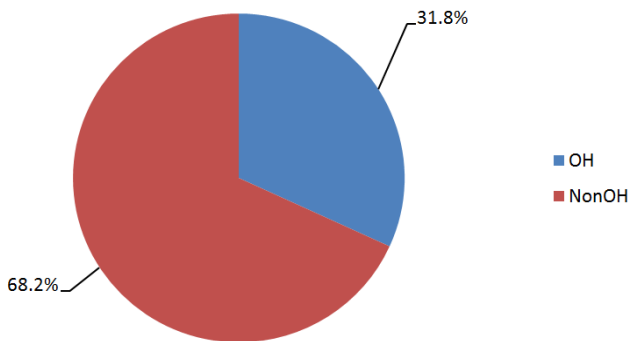


Figure 2. prevalence of OH in the population of 597 hypertensive patients.

Significant differences were found for age (56,46 for OH against 53,08 for NonOH with p=0,004), for SBP (158,96 for

OH versus 144,31 for NonOH), DBP (97,60 for OH and 90,00 for the NonOH with p <0,0001) and HR of 86,52/min for the group OH against 83,29/min for the NonOH group with p=0,016. (Table I).

Table I. Description of the constants of the 597 patients of the sample.

Variables	OH (N= 190) Mean ± SD*	NonOH (N= 407) Mean ± SD*	p
Age	56,46 ± 13,422	53,08 ± 13,478	0,004
Weight	67,94 ± 13,626	69,81 ± 14,331	0,133
Height	164,34 ± 7,413	165,57 ± 7,553	0,062
BMI**	25,18 ± 4,924	25,48 ± 5,113	0,499
Baseline SBP	158,96 ± 28,273	144,31 ± 24,623	<0,0001
Baseline DBP	97,60 ± 16,425	90,00 ± 14,759	< 0,0001
Baseline HR	86,52 ± 15,475	83,29 ± 15,058	0,016

*SD: standard deviation, ** Body Mass Index

Socio-demographic characteristics significantly different were sex (70,5% of OH for the female sex against 29,5% for the male sex with p=0,007), the age (from 3,7% of OH in age under 30 years to 46,3% for patients older than 60 years with p =0,007) and the educational level (72,1% of OH among unschooled patients to 2,1% in those in higher level with

p=0003) (Table II).

Table II. Distribution of the socio-demographic variables and the cardiovascular risk factors.

Variables		OH N (%)	NonOH N (%)	p
Sex	Female	134 (70,5)	240 (59,0)	0,007
	Masculine	56 (29,5)	167 (41,0)	
	< 30	7 (03,7)	18 (04,4)	
Age range (years)	30-44	25 (13,2)	86 (21,1)	
	45-59	70 (36,8)	171 (42,0)	
	>= 60 years	88 (46,3)	132 (32,4)	0,003
Level of schooling	None	137 (72,1)	247 (60,7)	
	Primary	28 (14,7)	53 (13,0)	
	Secondary	21 (11,1)	80 (19,7)	0,510
Diabetes	Higher	4 (02,1)	27 (06,6)	
	Yes	19 (10,0)	34 (08,4)	
Tobacco Smoking	No	171 (90,0)	373 (91,6)	0,506
	Yes	33 (17,4)	80 (19,7)	
Body Mass Index	Underweight	14 (07,4)	18 (04,4)	0,482
	Normal weight	83 (43,7)	192 (47,2)	
	Overweight	63 (33,2)	132 (32,4)	
	Obesity	30 (15,8)	65 (16,0)	

We didn't find significant difference in the crosstab number of medicaments and occurrence of orthostatic hypotension (Table III)

Table III. Crosstab of number of medicaments and orthostatic hypotension for 418 patients under medication.

Number of medicaments	Total sample N (%)	OH N (%)	NonOH N (%)	p
1	121	35 (28,9)	86 (71,1)	0,660
2	153	41 (26,8)	112 (73,2)	
3	137	43 (31,4)	94 (68,6)	
4	6	3 (50,0)	3 (50,0)	
5	1	0 (0,0)	1 (100)	

The logistic regression on significantly different variables in cross-tables allowed to find female sex (OR 0,594 and p=0,011).

Odd-ratios for the occurrence of OH versus the age group > = 60 years were 1.974, 2.616 and 1.692 respectively for ages < 30, 30-44 and 45-59 years (p = 0.004).

The OR for the occurrence of OH versus compared to higher education level were 0,411, 0,326 et 0,716 (p=0,049) resp. for unschooled, primary and secondary level (Table IV)

Table IV. Results obtained in logistic regression for the significant variables in bivariate analysis.

Variables		OR	95% CI	p
Sex	Female vs male	0,594	[0,398-0,888]	0,011
Age range	vs >= 60			0,004
	< 30	1,974	[0,771-5,059]	
	30-44	2,616	[1,509-4,536]	
	45-59	1,692	[1,124-2,547]	
Level of schooling	vs Higher			0,049
	None	0,411	[0,136-1,244]	
	Primary	0,326	[0,101-1,049]	
	Secondary	0,716	[0,222-2,314]	

4. Discussion

Our study was conducted in a large sample of 15 years and older hypertensive, including males and females with various educational levels. It thus made it possible to confirm certain data of the literature in particular:

- an overall prevalence of OH of 31,8%, lower than the 34,2 and 55% resp. of Weiss [13] and Poon [14]. It in particular higher than the 20,5% is obtained by Baragou [12], difference who could be explained by the research of OH in our study up to 5 minutes. This variability of the prevalence of OH depends on several factors and conditions [11-18]
- a higher mean age of OH patients and the increase in the prevalence of OH with the age (46,3% of our 60 years and older patients) as in other studies [1,12-14].
- our data suggested that more the blood pressure and the basic heart rate are high, more frequently occurred OH, this explainable on the one hand by the need for a greater number of drugs to lower BP. However even we did not find it in this study, many studies had highlighted a link between the number of drugs and the occurrence of OH [1,12]

In the majority of the studies, a male prevalence is found, which was not the case in our study, as in that of Fedorowski [19] which is a study on the general population.

We didn't find in the literature data on the educational level, which the more high the lower the occurrence of OH.

In this study we could not evaluate OH evolution in the time, which should be the subject of later studies.

5. Conclusion

OH is frequent among hypertensive population with nearly a third of the patients. The advanced age, the female sex, low education level, high baseline BP and HR are associated with a greater frequency of OH occurrence. The research of OH should be extended to 5 min in this group of patients

References

- [1] Ribstein J, of Cailar G, Halimi JM and Mimran A. Orthostatic hypotension. *Encycl Méd Chir, Cardiology*, 11-305-A-10, 2001,18 p.
- [2] Previsdomini M, Perren have, Marone C. Orthostatic hypotension: mechanisms, causes, treatment *Forum Med Switzerland* 2006; 6: 913-918
- [3] Freeman R, Wieling W, Axelrod BFR and Al Consensus statement one the definition off orthostatic hypotension, neurally mediated syncope and the postural tachycardia syndrome. *Covering joint Auton LMBO* (2011) 21:69 - 72
- [4] Streeten, DHP. Variations in the Clinical Demonstrations of Orthostatic Hypotension. *Mayo Covering joint Proc* 1995; 70:713 - 714

- [5] Gangavati has, Hajjar I, Quach L and Al. Hypertension, Orthostatic Hypotension, and the Risk off Falls in have Community-Dwelling Elderly Population: The Maintenance off Balance, Independent Living room, Intellect, and Zest in the Elderly of Boston Study. *J Am Geriatr Plowshare* 2011 March; 59 (3): 383-389.
- [6] Rutan GH, Hermanson B, Bild OF, Kittner SJ, LaBaw F, Such GS. Orthostatic Hypotension in Older Adults The Cardiovascular Health Study. *Hypertension* 1992; 19: 508-519
- [7] Shibao C, Biaggioni I. orthostatic hypotension and cardiovascular risk. *Hypertension* 2010; 56 (6): 1042-1044
- [8] Luukinen H, Koski K, Laippala P, Airaksinen KEJ. Orthostatic hypotension and the risk off myocardial infarction in the home-dwelling elderly Newspaper off Internal Medicine 2004; 255:486 - 493
- [9] Jones CD, Loehr L, Franceschini NR and Al. Orthostatic hypotension ace has incidental risk Factor for heart failure: The Atherosclerosis Risk in Communities (ARIC) Study. *Hypertension* 2012; 59 (5): 913-918
- [10] Agarwal SK, Alonso has, Whelton SP, Soliman EZ, Pink km, and Al (2013), Orthostatic Changes in Blood Pressure and Incidence off Atrial Fibrillation: Results from has Bi-Ethnic Population Based Study. *PLoS ONE* 8 (11): e79030. DOI: 10.1371/journal.pone.0079030
- [11] Weiss has, Grossman E, Beloosesky Y, Grinblat J. Orthostatic hypotension in acute geriatric ward: is it has consist finding? *Arch Intern Med.* 2002; 162:2369 - 2374.
- [12] Baragou S, Pio M, Pessinaba S, Redah D. Prevalence of orthostatic hypotension and its factors supporting at the hypertensive treated African blacks Side Medical African Newspaper. 2012; 11:12
- [13] Weiss has, Beloosesky Y, Kornowski R et al. Influence off Orthostatic Hypotension one Mortality Among Patients Discharged from year, Acute Geriatric Ward, *J GEN INTERN MED* 2006; 21:602 - 606
- [14] Poon IO, Braun U, High prevalence off orthostatic hypotension and its causative correlation with potentially medications among elderly veterans, *J Covering joint Pharm Ther.* 2005; 30 (2): 173-8 (Abstract)
- [15] Weiss has, Grossman E, Beloosesky Y, Grinblat J. Orthostatic hypotension in acute geriatric ward: is it has consist finding? *Arch Intern Med* 2002;162: 2369-2374.
- [16] Mader SSL, Josephson KR, Rubenstein LZ. Low prevalence off postural hypotension among community dwelling elderly. *JAMA* 1987; 258: 1511-1514.
- [17] Baliga R, Prabhu G, orthostatic hypotension in healthy elderly: is it has myth? *NR Am J Med Sci.* 2010; 2 (9): 416-418.
- [18] Gorelik O, Fishlev G, Litvinov V, and Al, First morning standing up may be risky in acutely it older inpatients. *Blood Close* 2005; 14: 139-43.
- [19] Fedorowski has, Stavenow Lars, Hedblad Bo, Berglund G, Nilsson PM, Melander O, Orthostatic hypotension predicts all-cause mortality and coronary vents in middle-aged individuals (The Malmö Preventive Project), *European Heart Newspaper* (2010) 31,85-91.