

Hypertensive Retinopathy in Guinean Hypertensive Women: Epidemiological, Clinical and Therapeutic Aspects

Sonassa Diane^{1*}, Abdoul Karim Baldé¹, Thierno Madiou Bah¹, Alpha Ibrahima Baldé¹,
Maxime Dantouma Sovogui², Fremba Camara³, Cyrielle Kouakou Mensah¹

¹Faculty of Health Sciences and Technologies, Gamal Abdel Nasser University of Conakry, Conakry, Guinea

²Bartimaeus Ophthalmological Clinic, Gamal Abdel Nasser University of Conakry, Conakry, Guinea

³Kankan Regional Hospital, Kankan, Guinea

Email: *dsonassa@yahoo.fr

How to cite this paper: Diane, S., Baldé, A.K., Bah, T.M., Baldé, A.I., Sovogui, M.D., Camara, F. and Mensah, C.K. (2022) Hypertensive Retinopathy in Guinean Hypertensive Women: Epidemiological, Clinical and Therapeutic Aspects. *Open Journal of Ophthalmology*, 12, 335-344.

<https://doi.org/10.4236/ojoph.2022.124030>

Received: August 8, 2022

Accepted: September 20, 2022

Published: September 23, 2022

Copyright © 2022 by author(s) and Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

Introduction: Hypertensive retinopathy is the set of retinal and papillary manifestations secondary to acute or chronic acute or chronic high blood pressure. Its frequency increases with age in women, its treatment requires the balance of blood pressure figures. **Purpose:** To study in women the epidemiological, clinical and therapeutic aspects of Hypertensive retinopathy at the application center of the Diploma of Specialized Studies in Ophthalmology (CADES/O). **Patients and Methods:** Prospective study conducted on 92 women who met the inclusion criteria over a period of six (6) months, from October 1, 2021 to March 31, 2022 in whom the diagnosis of Hypertensive Retinopathy was retained according to the Kirkendall classification. **Results:** We collected 92 patients with an average age of 57.88 years. The hypertensive Retinopathy was present at 61.75%. The age group of 60 - 69 years was the most represented at 40.22%. The socio-professional stratum most affected was housewives. The duration of the evolution of high blood pressure was from 2 - 5 years representing 57.61% of our study cases; the most common grade of high blood pressure was Grade II at 60.87%. Treatment of hypertension was irregularly followed in 73.91%. Stage II according to Kirkendall's classification was 58.70% common; the recurrent sign was retinal hemorrhage at 30.43%. Blood pressure balance was the treatment recommended to our patients at 80.48%. **Conclusion:** Hypertensive retinopathy is common in women and its management remains the balance of blood pressure figures with periodic and multidisciplinary monitoring.

Keywords

High Blood Pressure, Hypertensive Retinopathy, CADES/O. Guinean Woman

1. Introduction

High blood pressure (hypertension) is a considerable public health problem affecting almost 20% of adults [1]. A study conducted in France by Tuil *et al.* reported that 50% of women and 40% of men over the age of 65 are hypertensive [2].

In developing countries, it is frequently underestimated and leads to severe complications that are often indicative of the disease. The high risk of these complications results in the involvement of target organs such as cardiovascular, cerebrovascular, kidney and retinal involvement [3].

The eye is one of the target organs most affected by this pathology. The most well-known effect of hypertension on the eye is damage to the retina, called hypertensive retinopathy [4].

Indeed Hypertensive Retinopathy (RH) is the set of retinal and papillary manifestations due to acute or chronic arterial hypertension (hypertension) with systolic blood pressure (SBP) ≥ 140 mmHg and/or diastolic blood pressure (DBP) ≥ 90 mmHg.

Prevalence and incidence between 2% and 15% have been reported for various retinal microvascular lesions in the general population [5].

This retinopathy can manifest itself chronically and irreversibly (related to progressive changes in the arteriolar wall, by far the most common case) or acutely and reversibly (related to the interaction between severe pressure elevation and vascular self-regulation) [6].

Symptoms are usually only seen in late stages of the disease and usually include blurred vision or visual field abnormalities [7].

The ophthalmological clinical examination in particular the examination of the fundus is very often useful to make the assessment of the impact of arterial hypertension. This is an important time that allows macroscopic analysis of the retina in particular [8].

Lack of treatment for hypertension and poor adherence are factors that influence the occurrence of RHTA. An effective treatment for hypertensive retinopathy would be to mainly control hypertension as well as other disorders threatening vision [9].

In Republic of Guinea, in 2018, SANK D. *et al.* had collected that out of 159 hypertensive patients 61% were women with a sex ratio (M/F) of 0.64 [10].

Thus, the high frequency of hypertensive retinopathy in women, the lifestyle of Guinean women who are mainly Housewives, the lack of previous studies despite the frequency of hypertensive women in ophthalmological consultation in our context have motivated the choice of this study.

2. Materials and Methods

Our study was prospective descriptive and analytical over a period of six (6) months, from October 1st 2021 to March 31st, 2022.

All hypertensive patients admitted to the Application Center of the Diploma

of Specialized Studies in Ophthalmology (CADESO) in whom the diagnosis of hypertensive retinopathy was made during the study period regardless of their evolutionary stage constituted our study population.

The variable studied was epidemiological, clinical and paraclinical in their qualitative and quantitative, it was the frequency of hypertensive retinopathy concerning women, age, instruction level, occupation, origin, marital status, reason for consultation, visual acuity, risk factor, grade of high blood pressure, aspect of fundus according to the Kirkendall classification, duration of hypertension

We respected the rules of anonymity and confidentiality for all participants and requested their free and informed consent.

Included patients were hypertensive patients of any age and from any source in whom a complete ophthalmological examination after a complete dilatation of pupil with Mydriaticum 0.5%, fundus examination with Volk 90D after a delay of almost fifteen minutes between, revealed hypertensive retinopathy then were not included to our study Hypertensive man patients with hypertensive retinopathy, high blood pressure to women with another diseases, patients who consulted for any other pathology and those who did not agree to participate to our study.

We conducted a comprehensive recruitment of all patients who met the inclusion criteria.

Confidentiality and anonymity for the use of data have been respected for purely scientific purposes.

Our data was collected using a pre-established survey sheet, the analysis was done using the EPI INFO 7.4.0 software of Anova test and Khi 2 test with 0.05% of significativity has been adopted.

Our results were expressed as an average for the quantitative variables, as percentages for the qualitative variables.

The results have been presented in the form of tables and figures discussed according to recent and available data from the literature and presented using the Microsoft Word and Excel software of the Office 2016 pack.

Our limits were the unavailability of all the devices for the complementary examinations and the cost of certain examinations which did not allow everyone to carry out certain complementary examinations such as OCT and angiography.

3. Results

Of the 2053 patients received, 239 were hypertensives in total including 149 women (62.35%).

We collected 92 patients with hypertensive retinopathy with a percentage of 61.75% (n = 92).

The most found age group was 60 - 69 years 40.22% (n = 92), the mean age found in our study was 57.88 years with extremes of 20 to 85 years and a standard deviation of 13.88 years.

The most represented socio-professional layer was those of housewives at 46.74%, followed by civil servants at 23.91%.

As for the grade of hypertension, we recorded 60.87% grade II, patient treatment for hypertension was irregular in most of our patients at 73.91% compared to 26.09% for patients following their therapy.

The consultation for assessment of the impact of the hypertension was the common reason check up at 71.73% (**Table 1**).

The examination of the fundus was dominated by signs of retinal hemorrhage of which 30.43%.

Stage 2 of the KIRKENDALL classification was the predominant type in all of our patients at 58.70% (**Figure 1**).

During the study arteriosclerosis was associated with retinopathy to 32 patients (34.78%) and stage 1 of its classification had been recorded in 16 patients (50%).

Blood pressure balance with cardiologists was recommended to 80.44% retinopathy hypertensive women, for the others hypertensive women patients 19.56% a good hygienic diet, regular and bearable physical activity, the cessation of vices and above all a periodic multidisciplinary follow-up to Cardiologist, Internists, ophthalmologists, nephrologists according the cases have been recommended.

Our patients after follow-up, had shown a regression of signs of Hypertensive retinopathy over an interval of one to three months at 78.26% (n = 72).

The risks factors related to high blood pressure among women in our studies is age over 60 years explaining by the fact that in Republic of Guinea at this age most of women stay at home and do not work, the same aspect has been found to housewives whom are generally sedentary, thus exposing them directly to several risk preventing a good blood circulation in their body.

The statistical study demonstrated a significant link between hypertensive retinopathy and mean age by ($p = 0.02$), between RHTA and fo signs ($p = 0.001$) and Hypertensive retinopathy and occupation ($p = 0.03$) (**Table 2**).

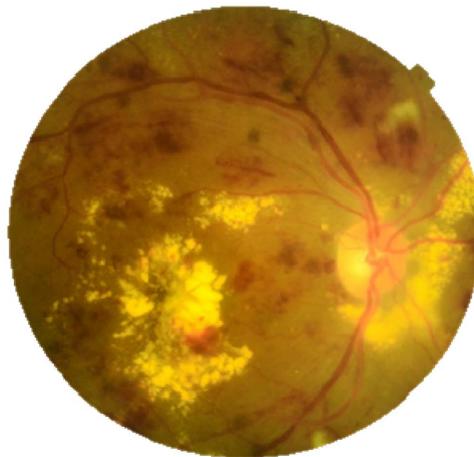


Figure 1. Right eye hypertensive retinopathy stage 2 of Kirkendall classification.

Table 1. Breakdown by reason for consultation. The fortuitous discovery of hypertensive retinopathy has been the most frequent in this study.

Reason for consultation	Frequency
Fortuitous discovery	71.73 (n = 66)
Visual blurring	16.30 (n = 15)
BAV	9.78 (n = 9)
Stroke	1.09 (n = 1)
Other	1.01 (n = 1)

Table 2. Distribution of hypertensive retinopathy by characteristics.

Variables	RHTA				p-value
	Total	Stage 1	Stage 2	Stage 3	
Age moy (ET)	57.88 (13.88)				0.02
HTA Grade					0.69
Grade 1	21	5 (6.52)	13 (14.13)	3 (3.26)	
Grade 2	56	12 (13.04)	35 (38.04)	9 (9.78)	
Grade 3	14	6 (6.52)	6 (6.52)	2 (2.17)	
Balance of High blood pressure					0.14
Yes	74	16 (17.39)	45 (48.91)	13 (14.13)	
No	18	8 (8.69)	9 (9.78)	1 (1.09)	
Fundus					<0.001
Dry exudate	10	0 (0.00)	10 (10.86)	0 (0.00)	
Retinal hemorrhage	22	0 (0.00)	22 (23.91)	0 (0.00)	
Cotton nodules	22	0 (0.00)	22 (23.91)	0 (0.00)	
Oedemepapillar	14	0 (0.00)	0 (0.00)	14 (15.21)	
Arterial shrinkage	24	24 (26.09)	0 (0.00)	0 (0.00)	
Origin					0.78
Peri-urban area	16	3 (3.26)	11 (11.96)	2 (2.17)	
Rural	7	1 (1.09)	6 (6.52)	0 (0.00)	
Urban area	69	20 (21.74)	37 (40.22)	12 (13.04)	
Occupation					0.03
Official	22	4 (4.35)	16 (17.39)	2 (2.17)	
Housewife	43	16 (17.39)	4 (4.35)	23 (25.00)	
Professional	19	3 (3.26)	8 (8.70)	8 (8.70)	
Student	1	0 (0.00)	1 (1.09)	0 (0.00)	
Retired	7	1 (1.09)	6 (6.52)	0 (0.00)	

4. Discussions

In order to study the hypertensive retinopathy to Guinean women at the center of specialized studies in ophthalmology, the present study was carried out to determine the epidemiological, clinical and therapeutic aspects of hypertensive retinopathy.

Our study was prospective and descriptive type for six (06) months starting from 1st of October, 2021 to March 3rd, 2022.

Among the 2053 patients registered at the center of specialized study in Ophthalmology, 239 were hypertensive including 149 hypertensive women (62.35%) of which 92 (61.75%) patients of them met our inclusion criteria.

Our result is similar to that of Sank D. and al. who recorded a female predominance of 61% of hypertensive patients in his study [10].

The female gender was dominant and this could be explained by the sedentary lifestyle of Guinean women who are usually housewives; one of the risk factors for high blood pressure.

The hypertensive retinopathy was frequent at 61.75%, our result is higher than that of Zhenzhen *et al.* [11] which had found 32.5% of patients with hypertensive retinopathy then this difference would explain the occurrence of complications of hypertension, which are more present in women after 60 years old.

The majority of our patients came from the urban area, the five (5) communes of Conakry as Conakry has five (75%), these figures were similar to most of the studies carried out in Guinea [12] and could be explained by the fact that the study took place in Conakry, thus raising questions of accessibility to specialized care for populations living at peripheral zone of the city particularly in rural areas.

In our study the age group of 60 - 69 years was the most represented. The average age was 57.88 years, with extremes of 20 - 80 years, this average age was higher of Kouassi *et al.* Study with an average age 45, 68 years and to Coulibaly N. *et al.* study who found 43.6 years. [13], this superiority of age in our study would give importance to this pathology which affected women continuously with the evolution over time.

During our study the most frequent occupation was housewives, our result is different to Agbodossodji P. study who reported that liberal trades were the most represented profession (52.78%) [3].

High blood pressure preferentially affects the most vulnerable populations with less information on hypertension prevention and control measures.

Body Mass Index (BMI) was predominantly dominated by obesity. This was higher of Pilly C. *et al.* (2.7%) [14].

This predominance could be explained by the mode of recruitment, our patients were generally hypertensive and were almost not associated with others pathologies; However, their study was associated with Chronic renal Failure and could increase the frequency.

Regarding the level of education, the out-of-school status was the most

represented.

Our result is different from that of Agbodosondji P. who had recorded the primary level as the most represented to 43.06% [3] and this predominance could be explained by the high number of out-of-school population in Guinea.

The majority of patients had hypertension with a course of 2 - 5 years.

Our result was lower than that of Sylla D. which reported a percentage of 42% of patients with a course of less than one year [12].

This would show the delay in diagnosis in its context with a discovery of the disease at the stage of complications.

The antihypertensive treatment was irregularly followed, our workforce was close to that of EL HOUSSENE *et al.* who had recorded 78.6% cases in his study [15].

It could be due to the high cost of medications, the chronicity of treatment and non-compliance with hygienic-dietary measures.

Hypertension was the most represented field followed by the association of hypertension/Diabetes. Our workforce is similar to that of Petronile A. which had reported hypertension the most represented field (73.61%) followed by Diabetes (12.5%) in its study [3].

This result would likely show hypertension being one of the probable causes of the occurrence of RHTA.

Grade 2 had the most cases. Our result is higher than those of PILLY *et al.* in Tanzania, which had collected 46.4% for grade 2 of high blood pressure [14].

There is a probable association between the grade of hypertension and the occurrence of hypertensive retinopathy.

In addition, our result is close to the literature which believes that retinopathy hypertensive is generally discovered in severe hypertension.

In our study stage 2 of retinopathy hypertensive according to kirkendall was the most represented.

Our result is higher than that reported by DIALLO *et al.* who had reported a percentage of 5.55% in stage II of Kirkendall.

This result could be justified by the fact that its study population was subjected to fundus examination for different reasons such as sickle cell retinopathy and diabetic retinopathy. This discovery at a more advanced stage (stage 2) of retinopathy could probably be due to the late discovery of hypertension, lifestyle, systematic taking of blood pressure (not yet really entered the mores of the population).

During the study arteriosclerosis was associated with retinopathy to 32 patients (34.78%); and stage 1 had recorded 16 patients (50%). Our result is higher than that of Agbodosondji P. who had reported 20.83% of cases of arteriosclerosis [3].

These numbers would probably explain why arteriosclerosis would be one of the consequences of chronic hypertension not or poorly managed associated with age-related changes in vascular walls of patients with retinal lesions.

The visual acuity found in our study was mostly low at 1/10 and above represented in the right eye without correction.

From 2/10 to 5/10 was the series most represented in the left eye without correction. In the right eye and left eye with correction the most represented level was 2/10 - 5/10.

The high presence of elderly people during our study would explain this decrease in visual acuity.

Retinal hemorrhage was predominant at the fundus at 30.43% followed by cottony nodules at 23.91%.

This result is comparable to that of EL HOUSSEINE (39.4%) of hemorrhages, 3% of cotton nodules [15].

The predominance of retinal hemorrhage would likely be justified by age-related retinal degeneration.

Note that two or more of these signs could exist in the same patient.

Regarding defects, our results are lower than that of SYLLA D. in his study which had reported smoking and alcoholism respectively, 33.87% and 19.35% [12].

This result is explained by the fact that women have a more regulated lifestyle than men.

The hypertensive retinopathy balance sheet was the most represented reason for consultation in our study. Our result is different from Hassan T. in Niger, which had collected 27.78% in favour of the fortuitous discovery. This result could be explained by the method of recruitment, patients were most often referred from specialized services.

The balance of blood pressure was the most recommended to patients.

These results would explain the data in the literature that states that the effective treatment of retinopathy hypertensive remains the balance of blood pressure by antihypertensive drugs.

The course of treatment was favorable and marked with a regression of signs. This would justify the literature that states that an effective treatment for hypertensive retinopathy is to balance blood pressure.

Our study showed no accentuation of signs only a clinical status quo in some cases.

5. Conclusion

Hypertensive retinopathy is a microvascular complication of hypertension and remains very common in older women. Its evolution is most often silent on the retina and the optic nerve because the signs are appreciable at the fundus when the hypertension is severe. In our study, the female gender of 61 - 69 years old, housewives with a grade 2 of hypertension usually occurred with signs of retinal hemorrhage at the back of the eye. As for the treatment, the strict maintenance of a balance of blood pressure figures was the most recommended followed by a healthy lifestyle. Multidisciplinary care involving the cardiologist, ophthalmolo-

gist and nephrologist is necessary. No other HTA-related eye complications were revealed in our study. However, there is a possible relationship between the rapid onset of hypertensive retinopathy in hypertensive and diabetic patients.

Acknowledgements

We thank the staff of the application center of the Diploma of Specialized Studies of Ophthalmology, our colleagues of the Cardiology Department of the Donka National Hospital who assisted us in carrying out this work.

Conflicts of Interest

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

References

- [1] Ambresin, A. and Xavier, F. (2015) High Blood Pressure and Eye. *Swiss Medical Review*, **11**, 2366-2372.
- [2] Rakotoarimanana, T. (2010) Epidemio-Clinical Aspects of Hypertensive Retinopathy Meeting at the De Lavision Institute Madagascar. University of Antananarivo, Antananarivo.
- [3] Petronile, A. (2019) Hypertensive Retinopathy: Epidemiological and Clinical Aspects at the Nephrology Department of the Donka National Hospital. Gamal Abdel Nasser University of Conakry, Conakry.
- [4] Koki, G., Epée, E., Billong, Y., Emche, C.B., Ebana, M.S.R., Ombgwa Eballé, A., Bella, A.L. and Ebana, M.C. (2016) Prevalence of Retinal Lesions Due to High Blood Pressure in a Population of Hypertensives in Cameroon. *Revue SOAO*, N°1, 31-38.
- [5] Erden, S. and Bicakci, E. (2012) Hypertensive Retinopathy: Incidence, Risk Factors, and Comorbidities. *Clinical and Experimental Hypertension*, **34**, 397-401. <https://doi.org/10.3109/10641963.2012.663028>
- [6] Amadou Bouba Traoré Hassane (2019) Epidemiological and Clinical Aspects of Hypertensive Retinopathy in Patients Aged 15 Years and Older at Maradi CHR from 1 January 2019 to 31 August 2019. Gamal Abdel Nasser University of Conakry, Conakry.
- [7] Mehta, S. (2022) Rétinopathie Hypertensive Troubles Oculaires. Édition MSD. <https://www.merckmanuals.com>
- [8] Wenceslas Diallo, J., Nonfounikoun, M., Tougouma, S.J.B., Ahnoux-Zabsonré, A., Yé, R., Djiguimé, P., *et al.* (2015) Interests of the Examination of the Fundus in City Practice: Assessment of 438 Cases. *The Pan African Medical Journal*, **20**, Article No. 363. <https://doi.org/10.11604/pamj.2015.20.363.6629>
- [9] Mehta, S. (2020) Rétinopathie Hypertensive. Sidney Kimmel Medical College - Thomas Jefferson University, Philadelphia, 21.
- [10] Diallo, A.A.S., Bah, M.L.Y., Barry, M., Baldé, N.M. and Sylla, A. (2018) Prévalence de l'Hypertension artérielle chez le diabétique à l'unité de diabétologie de l'Hopital Regional de Kindia. 5.
- [11] Zhang, Z., Lu, J. and Qin, X. (2019) Case Report: Optical Coherence Tomography Can Find Typical Features in Pregnancy-induced Hypertension with Retinopathy. *Optometry and Vision Science*, **96**, 372-375. <https://doi.org/10.1097/OPX.0000000000001369>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6493674/>

- [12] Sylla, D., Kake, A., Diane, B.F., Wann, T.A., Sylla, I.S., Camara, I., *et al.* (2019) Hypertension artérielle maligne: Fréquence, aspects clinique et prise en charge. *Revue Africaine de Médecine Interne*, **6**, 25-28.
- [13] Yattara, H., Samaké, M., Fofana, A.S., Simaga, A., Touré, A., Coulibaly, N., Diallo, D., Sy, S. and Fongoro, S. (2020) Prévalence et complications de l'hypertension artérielle maligne dans le service de Néphrologie du CHU du point G.
- [14] Pilly, C., Ame, I., Sanyiwa, A., Ruggajo, P. and Kamuhabwa, P. (2019) Hypertensive Retinopathy and Associated Factors among Nondiabetic Chronic Kidney Disease Patients Seen at a Tertiary Hospital in Tanzania. *International Journal of Nephrology and Renovascular Disease*, **12**, 79-86.
<https://www.ncbi.nlm.nih.gov/pubmed/31118738>
- [15] El Housseine (2008) Aspects cliniques thérapeutiques et évolutifs de l'HTA maligne au cours de l'insuffisance rénale au service de néphrologie et d'hémodialyse du CHU du point G. Université de Bamako, Bamako.