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Epidemiological, clinical and angiographic aspects of retinal venous occlusions at the Application Center for the Diploma of Specialized Studies in Ophthalmology (Cades/o) Donka / Conakry

Fofana I.*[1], Touré ZA [1], Bah TM [1], Diané S [1], Tonouhéoua AGO [1], Cissé I [1], Sagno C [1], Ketema AM [1], Traré L [1], Traoré J [1]

1. Gamal Abdel Nasser University of Conakry.

Corresponding Author: Fofana I, Gamal Abdel Nasser University of Conakry, DES/O-CADES/O.

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Abstract

Aim: *To describe the epidemiological, clinical and angiographic characteristics of retinal venous occlusions at CADES/O DONKA in Conakry.*

Patients and Methods: *This retrospective and prospective descriptive study, lasting 12 months, involved a total of 22598 patients who consulted CADES/O. The variables studied were epidemiological (age and sex), clinical (risk factors, visual acuity, affected eye, type of OVR and associated complications) and angiography (form of OVR and macular involvement).*

Results: *Twenty-six patients (29 eyes) with retinal venous occlusions were observed, for a hospital prevalence of 0.13%. The mean age of the patients was 53.4 years and the sex ratio was 0.6. High blood pressure, diabetes and primary open-angle glaucoma were the main risk factors found in our patients, with 46.2%, respectively; 23.1% and 23.1% of cases. The majority of our patients were blind on admission (72.4%). Only 04/29 eyes (13.8%) had visual acuity greater than 3/10. OG is the most affected with 53.8% of cases. Bilateral involvement concerned 03 patients (11.6%). Complications were noted in 05 eyes / 29 (17.2%), represented by neo-retinal vessels (60%), intravitreal hemorrhage (20%) and iris rubeosis (20%). Central retinal vein occlusion was the most common type with 19 cases in 29 eyes, a frequency of 65.5%. The edematous form of retinal venous occlusions was the most frequent with 19 affected eyes, is 63% of cases. Macular involvement was present in 75.9% (22 eyes / 29).*

Conclusion: *Retinal venous occlusions are the second retinal vascular disease after diabetic retinopathy and are a common cause of reduced visual acuity. Their prevalence increases with age.*

Key Words: *Retinal venous occlusion-Cades/o-Conakry*

Introduction

Retinal vein occlusion (RVO) is a slowing of blood flow in the retinal veins. They are the second most frequent cause of retinopathy of vascular origin, after diabetic retinopathy. They can be classified according to the site of the obstruction as central retinal vein occlusion (CRVO) or branch retinal vein occlusion (BRVO) **[**1**]**.

The most common predisposing factors are age, arterial hypertension, hyperlipidemia, diabetes mellitus and ocular hypertension **[**2**]**.

The contribution of retinal angiography allows a better analysis of the damage and also to recognize the different clinical pictures and their evolutions **[**3**]**.

The prevalence of venous occlusion varies between 0.7 to 1.6% and affects approximately 1.6 million people worldwide **[**4**]**.

Thus, our study consisted in taking stock of the epidemiological, clinical and angiographic profile of retinal vein occlusions in the ophthalmology department of CADES/O Donka in CONAKRY over a period of one year to have data on this condition in Guinea. and to be able to compare them with other data from Africa and the rest of the world.

Methodology

The framework of our study was the Center of Application of the Diploma of Specialized Studies of Ophthalmology CADES / O located in the enclosure of the national hospital of Donka in the commune of Dixinn in Conakry / Republic of Guinea.

This was a retrospective and prospective descriptive study, lasting 12 months (January-September 2018 for the retrospective study and October-December 2018 for the prospective study) which involved 22,598 patients among whom we have selected the records of patients in whom fundus examination and retinal fluorescein angiography made it possible to make the diagnosis of retinal vein occlusions.

Inclusion criteria

Were included in our study, all patients with retinal vein occlusion with a complete medical file with agreement (for the prospective period).

Non-inclusion criteria

Were not included in our study, patients with retinal vein occlusion whose files were not available or complete or had not given their consent (for the prospective period).

Our variables were epidemiological (age, sex), clinical (risk factors, visual acuity, affected eye, type of retinal vein occlusion, associated complications) and angiographic (shape of retinal vein occlusion, macular involvement).

Incomplete files for the retrospective period and patients who did not give their consent (for the prospective period) were excluded from the study.

Data collection was made from patient records, angiography data and various patient registration registers.

The data was processed and analyzed by the EPI info 5 software.

The Chi-square test was used with a significance level and any value with $p < 0.05$ was considered statistically significant.

Our patients were informed of the purpose of our work in order to obtain their free and informed consent (for the prospective period), the anonymity of the patients in all cases was guaranteed.

Results

Sociodemographic characteristics

Hospital frequency

We collected 29 eyes with retinal vein occlusions for 26 patients out of a total of 22,598 patients consulted at CADES/O during the same study period, i.e. a frequency of 0.13%.

Age

The average age was 53.4 years with extremes ranging from 30 to 78 years.

The 50-59 age group was the most affected with 38.5%.

Sex

The female sex was the most affected with 61.5% and a sex ratio of 0.6.

Clinical features

Risk factors N=26

Type of risk factors	Actual	Rate (%)
HTA	12	46,2
Diabetes	06	23,1
GPAO	06	23,1
HTO	02	7,7
Tobacco	2	7,7
Eye trauma	2	7,7
Contraceptives	1	3,8
total	31	100

N= 26

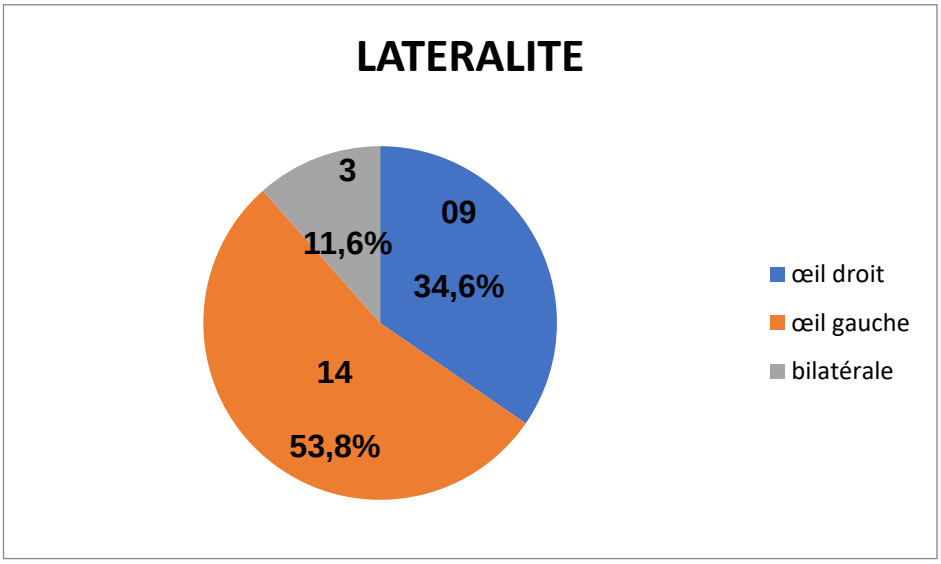
Arterial hypertension, diabetes and primary open-angle glaucoma were the main risk factors found in our patients, with 46.2% respectively; 23.1% and 23.1% of cases. It should be noted that 08 patients had at least 02 associated risk factors.

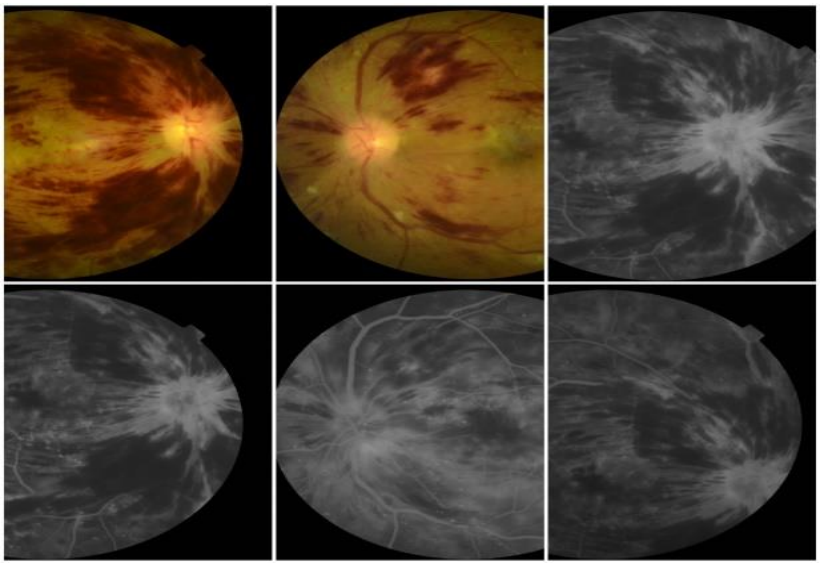
Acuity

Acuity	Actual	%
≥ 3/10	4	13.79
]3/10 ;1/10]	4	13.79
< 1/10	**21**	**72.41**
Total	29	100

The majority of our patients were blind on admission (72.4%). Only 04/29 eyes (13.8%) had visual acuity greater than 3/10.

Laterality

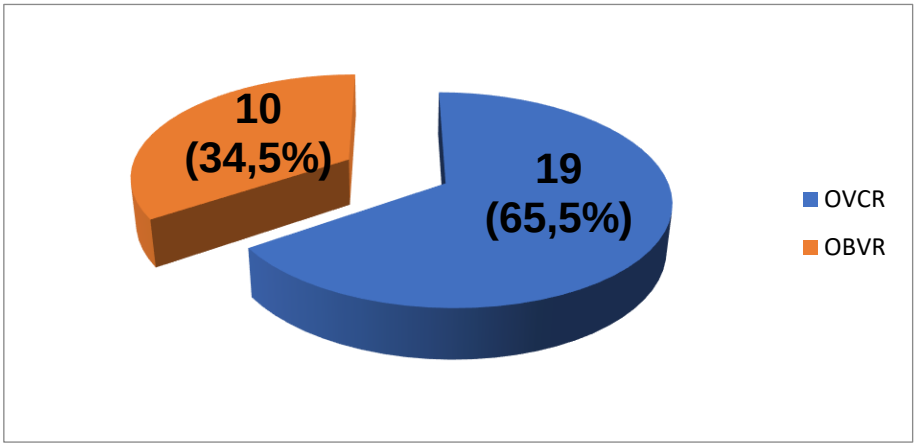




The left eye was the most affected with 53.8% of cases. Bilateral involvement concerned 03 patients (11.6%).

Non-ischemic bilateral CRVO in a 41-year-old patient (alcohol-smoking with hypertension and associated diabetes). Cades/o Donka.

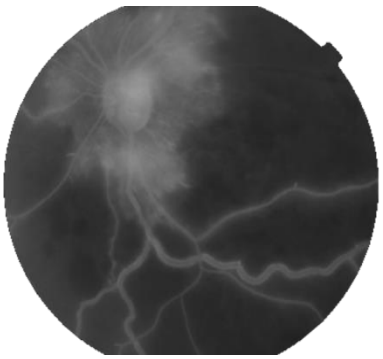
Type of retinal vein occlusions



Central retinal vein occlusion was the most common type with 19 cases out of 29 eyes, a frequency of 65.5%.

Complications

Complications were noted in 05/29 eyes (17.2%). They were represented by retinal neovessels (60%), intravitreal hemorrhage (20%) and rubeosis iris (20%).



Angiofluorography:

Papillary neovascularization (ischemic CRVO) in a 38-year-old patient (known hypertensive): Cades/o Donka

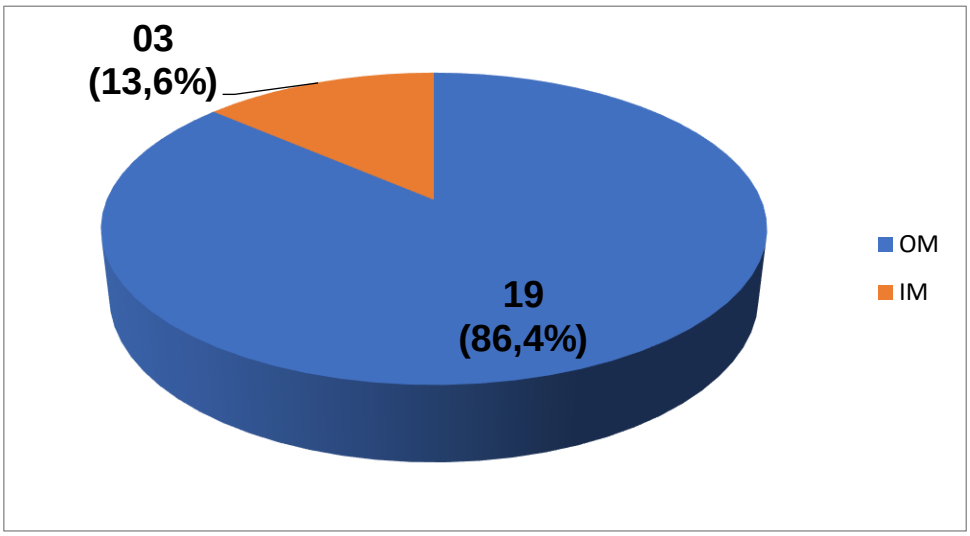
Angiography:

Form of retinal vein occlusions

The edematous form of retinal vein occlusions was the most common with 19 eyes affected, i.e. 63% of cases. It should be noted that 02 of our patients had not benefited from angiography.

Macular involvement.

Macular involvement was present in 75.9% (22/29 eyes).



Macular oedema accounted for 86.4% of macular involvement.

Macular involvement and type of RVO

Distribution of macular involvement by type of retinal vein occlusion.

Macular involvement	OVCR	OBVR	Actual
Macular oedema (OM)	14	05	19
Macular ischemia	2	1	3
No infringement	3	4	7
Total	**19**	**10**	**29**

Macular damage was found in 72.7% (16 cases/22) of cases during CRVO against 27.3% for BRVO (6 cases/22). And 84.2% (16/19 cases) of eyes with CRVO showed macular involvement compared to 60% of BRVO cases (6/10 cases).

OVR types and age

Distribution of RVO types by age group

Type Age	OVCR	OBVR
30 to 39 years	21.05%	30%
40 to 49 years	21.05%	10%
50 to 59 years	36.84%	30%
60 years and older	21.05%	30%
Total	**100%**	**100%**

Regardless of the type of RVO, the age group over 50 years was the most affected with respectively 57.9% (11 cases/19) for CRVO and 60% (6 cases/10) for BRVO.

Visual acuity and type of retinal vein occlusions

Types AVL	% and eff. OVCR	% and eff. OBVR
≥3/10	(5, 9 %) **1**	30% **3**
1/10 to <3/10	(15,8%) **3**	10% **1**
<1/10	(78,9%) **13**	60% **6**
Total	(100%) **17**	(100%) **10**

The decrease in visual acuity was more marked in central retinal venous occlusions (94.7%) than in venous branch occlusions (70%)

Visual acuity and forms of retinal vein occlusions

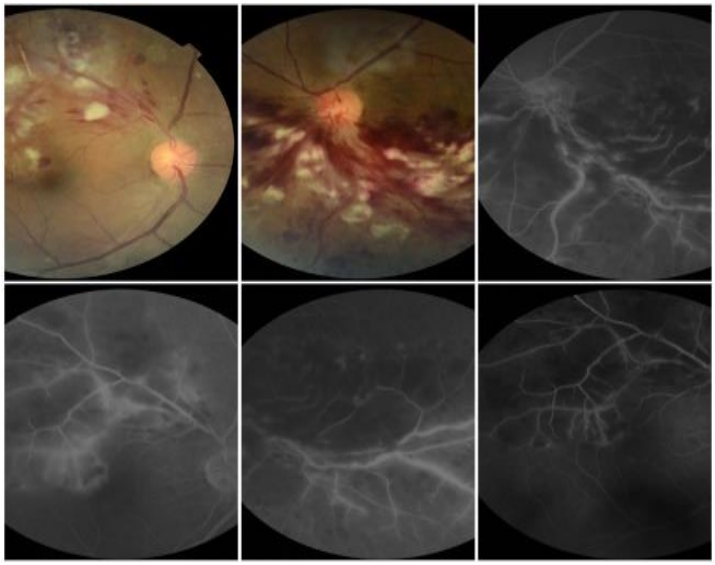
AVL	Forms Ischemic	Edematous
≥3/10	(11,1%) **1**	(15,8%) **3**
1/10 to <3/10	(11,1%) **1**	(10,5%) **2**
<1/10	(77,8%) **7**	(73,7%) **12**
Total	(100%) **9**	(100%) **17**

Visual acuity was lower in ischemicforms of retinal vein occlusions with 77.8% than in edematouss with 72.6%.

Types of retinal vein occlusions by Risk Factors (N=18)

Risk factors	Type Retinal vein occlusions. OVCR OBVR Staff		
HTA	7(36.8 %)	5(50%)	12
Diabetes	4(21%)	2(20%)	6
GPAO	4(21%)	2(20%)	6
HTO	2	0	2
Tobacco	2	0	2
Eye trauma	0	1	1
Contraceptives			

Regardless of the type of OVR, hypertension, diabetes and CAPM remain the main risk factors.



Bilateral ischemic BRVO in a diabetic hypertensive patient: Cades/o Donka

Comments and Discussions

The frequency of retinal vein occlusions varies from one study to another. In our series, we found 29 cases of RVO out of 22,598 consultations. That is a hospital prevalence of 0.13%.

Our frequency is lower than those found by Koki et al. in Cameroon **[**5**]** and Raba et al. in Nepal **[**1**]** who respectively reported a frequency of 1.38% and 2.95%. This could be explained by the fact that

our study was limited in time and that we took into account all the consultations during the study period. Unlike these authors who worked over a longer period and on a population of diabetics (Koki) and patients over 60 (Raba) who are populations at risk of retinal vein occlusion.

In our series, the female sex was the most affected with 16/26 (61.5%) or a sex ratio of 0.6. Our results differ from some studies published in the literature where a male predominance has been reported such as those conducted by Koki et al. in Cameroon **[**5**]**, Uhumwangho et al. in Nigeria **[**6**]** who found 1.3 and 2.3 respectively; but are close to the results found by Fiebai et al. in Nigeria **[**7**]** who found 74% of women affected (sex ratio: 0.35).

In our study, the 50-59 age group was the most affected (38.5%). The average age was 53.4 years with extremes of 30 and 75 years. Moreover, the majority of subjects with RVO were 50 years or older (61.6%).

Our results are comparable to those of Fiebai et al. in Nigeria **[**7**]** and Younes in Morocco **[**8**]** who respectively found an average age of 54.8 and 53 years with extremes of 38 and 73 years and 35 and 67 years.

This result is consistent with statements in the literature that increasing age and especially after 50 years is considered a risk factor for retinal vein occlusions **[**9**]**.

In our study, at least one risk factor was found in 18/26 patients, i.e. 69.2%. The main risk factors found were, in order of frequency, arterial hypertension 12/26 patients (46.2%), diabetes 6/26 (23.1%) and primary open-angle glaucoma 6/26 (23. 1%). It should also be noted that we noted in one patient (4.1%) the use of oral-combined contraceptive as a risk factor and the association of at least two risk factors in eight patients/18 (44.4 %).

Our results are comparable to those found in the literature in terms of frequency of risk factors: Younes in Morocco **[**8**]** found 12 patients/26 (46.15%) for hypertension, POAG 8 (30.7%) and 6 (23%) for diabetes; Koki et al. in Cameroon **[**5**]** found frequencies lower than ours but with hypertension as the first risk factor with 21.42%, followed by diabetes 21.42% and glaucomatous hypertension 14.28%; Uhumwangho et al. in Nigeria **[**6**]** found higher frequencies with hypertension still the primary risk factor with 14/20 patients (70%), followed by diabetes 9/20 (45%) and glaucoma in 5/20 (22, 7%)

Visual acuity on admission was poor (less than 1/10) in 21 eyes (72.4%) with a greater number in patients with central retinal vein occlusions.

Our results agree with those found by Fiebai et al in Nigeria 24/34 eyes (70.58%) with visual acuity less than 3/60 including (42.85%) affected by branch retinal vein occlusions against 77.77 % central retinal vein occlusion **[**7**]**.

This is consistent with data from the literature which find a moderately low baseline visual acuity **[**9**]** and state that central retinal vein occlusion is a disease that affects anatomy and visual function more adversely than for branch retinal vein occlusions **[**10**]**.

In our study, the laterality was in favor of the left eye with 14 patients (53.8%) against 09 patients (34.6%) for the right eye and 03 bilateral patients (11.6%).

Our results differ from those of Koki et al in Cameroon **[**5**]** who found 43 patients (61.4%) with right lesions and 25 (35.7%) with the left eye. Bilateral involvement was present in 02 patients (2.8%) and of those in the literature data with less than 10% bilaterality **[**9**]**.

In our study, central retinal vein occlusions were the most common with 19/29 (65.5%) eyes versus 10/27 (34.5%) eyes with branch retinal vein occlusions.

Our results are identical to those of Diagne et al. in Senegal 77.77% central retinal vein occlusions versus 22.22% branch retinal vein occlusions **[**11**]** and Fiebai et al. in Nigeria 79.1% central retinal vein occlusions versus 20.58 branch retinal vein occlusions **[**7**]** but differ from those of Koki et al. in Cameroon **[**5**]** who found 61.11% (44/72 eyes) of branch retinal vein occlusions against 38.89% (28/72 eyes) of central retinal vein occlusions.

In our study, the edematous form was the most frequent with 17/27 eyes (63%) followed by the ischemic form 9/27 (33.3%) and the mixed form 1/27 (3.7%).

Because of the unavailability of OCT, we contented ourselves with the information provided by retinal fluorescein angiography.

Two patients had not benefited from angiography, therefore had not been classified according to the form.

We also found that whatever the type of retinal vein occlusion, the edematous form was the most frequent. Thus, we note 70% of edematous BRVO and 58.8% for edematous BRVO.

Our results agree with those recorded by Koki et al. in Cameroon **[**5**]** and YOUNES in Morocco **[**8**]** who found 54.90% and 53.84% respectively for the oedematous form; 37.59% and 26.93% for the ischemic form and finally 7.48% and 19.23% for the mixed form.

With the lack of OCT optical coherence tomography, we contented ourselves with retinal fluorescein angiography to assess macular involvement. Thus, in our patients, macular involvement was present in 22/29 eyes, i.e. 75.9%. This attack was of edematous form for 19 eyes/22 or 86.3% against 3 eyes/20 or 13.6% for the ischemic form.

Our results are comparable to those of Uhumwangho et al. in Nigeria **[**6**]** and YOUNES in Morocco **[**8**]** who found frequencies of 68.2% and 65.42% respectively.

This high rate of macular involvement in our study could explain the high frequency of poor initial visual acuity (72.4% blindness).

In our series, complications were present in 05/29 eyes, i.e. 17.24%. They were represented by 3/5 (60%) retinal new vessels, 1/5 (20%) for intravitreal hemorrhage and 1/5 (20%) for rubeosis iris. The complication rate in our study seems lower than those published in the literature **[**6, 7**]**.

Conclusion

Retinal vein occlusions are the second most common retinal vascular disease after retinopathy and are a common cause of vision loss and blindness. Their prevalence varies by region and increases with age. The diagnosis of this pathology is clinical but angiography allows us to recognize the shape and OCT to fully appreciate the macular involvement.

Although limited in time and space, our study has enabled us to understand that retinal vein occlusions are frequent pathologies in our current practices. With the lack of data about them at the national level, we aimed to determine their epidemiological, clinical and angiographic aspects at the center for the application of the diploma of specialized studies in ophthalmology and to set up the outline of a more extensive study in time and space in order to be able to draw a national conclusion.

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