

Retinal Vein Occlusion: Epidemiological, Clinical and Therapeutic Aspects at the CADES/O

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Abstract

Introduction: The aim of this study was to contribute to the study of the epidemiological, clinical and therapeutic aspects of retinal vein occlusions (RVOs).

Materials and Methods: This was a descriptive cross-sectional study covering a 6-month period from 01 July 2022 to 31 December 2022.

Results: During the study period, out of 3612 patients received at CADESSO, we recorded 23 cases of RVOT, i.e. 6.3%. The mean age was 55.17 years, with extremes of 25 and 72 years. The sex ratio was 1.3 in favour of men. The main reasons for consultation were visual acuity decline (VAD) (69.5%) and visual blur (56.5%). Glaucoma was the most common ophthalmological antecedent in our patients (21.7%). Arterial hypertension (60.8%), diabetes (34.7%) and stress (17.4%) were the most common general antecedents. Among our patients, 16 (70%) had a CRVO and 7 (30%) had an RVO. On OCT, 17 (73.9%) of the patients had macular oedema. Intra-vitreous injections (65.2%) of anti-VEGF and/or corticosteroids and argon laser (26%) were the most commonly used therapeutic practices.

Conclusion: RVO is a major cause of visual impairment. Prompt, appropriate treatment and management of risk factors can improve visual prognosis.

Keyword: OVR; Risk Factors; Treatment; CADES/O; Guinea

Introduction

Retinal vein occlusions are a heterogeneous group of disorders which have in common a sudden alteration in the venous return of the retinal circulation [1].

"Nowhere else in the body does the occlusion of a small vein seem to have the importance and repercussions that it has in the eye. And above all, nowhere else can its signs, evolution and sequelae be analysed with such precision in human clinical practice". This statement by Coscas and Dhermy [2] clearly illustrates the discrepancy between the size of the retinal veins affected and the sometimes major visual repercussions.

Advanced age, arterial hypertension, glaucoma, dyslipidaemia, diabetes mellitus and active smoking are major risk factors for RVO.

RVO can be classified as central retinal vein occlusion, retinal vein branch occlusion and hemi-retinal vein occlusion depending on the site of the obstruction. The two major forms are RVO and RVVO.

If the occlusion occurs inside or behind the optic nerve head, it is labelled.

In 2019, Song Peige and colleagues, in their study of the global epidemiology of RVO, report that RVO is the second leading cause of retinal vascular blindness after diabetic retinopathy [3].

In Australia in 2018, Keel Stuart and colleagues in their study looking at the prevalence of retinal vein occlusion found that RVO was the fifth most common cause of unilateral blindness [4].

In Nepal, in 2017, Thapa Raba and colleagues report in their cross-sectional study on the prevalence and risk factors of RVO that the overall prevalence of RVO was 2.95% with unilateral and bilateral involvement of 85.45% and 14.55%, respectively [5].

In 2019, Li Jeany and colleagues, in their study on the prevalence of RVOT in Europe, report that in the European Union, the total number of people affected has been estimated at almost 20%, rising from 900,000 today to 1.1 million in 2050 [6].

In Cameroon, in 2020, Koki G., *et al.* reported in their descriptive cross-sectional study of RVO treated with intravitreal injections of bevacizumab at the Yaoundé Armed Forces Training, Application and Reference Hospital that the risk factors were mainly hypertonia (14.28%) [7].

In Benin, in 2018, Odoulami L., *et al.* report in their study on retinal vein occlusions that macular oedema is the most frequent complication [8].

The scarcity of studies on retinal vein occlusions in Guinea, the urgency that they constitute and the need to bear in mind the great diversity of their clinical forms in order to define the best management for the patient were among the reasons for the choice of this theme.

Objective of the Study

To carry out this study, we set ourselves the following objectives.

General objective

- Study retinal vein occlusions at CADES/O.

Specific objectives

1. To study the socio-demographic characteristics of patients with retinal vein occlusion during the CADESSO study period.
2. To determine the frequency of different risk factors in subjects with retinal vein occlusion.
3. Describe the clinical picture of RVOT.
4. List the different treatments applied to CADES/O.

Materials and Methods

The application center for the diploma of specialized studies in ophthalmology (CADES/O) provided the setting for our study. It is located within the Donka National Hospital in the commune of Dixinn in Conakry (Republic of Guinea).

Our study material consisted of all patients examined and diagnosed with RVOT.

This was a descriptive cross-sectional study lasting 06 months from 01 July to 31 December 2022.

All patients who underwent a complete bilateral comparative ophthalmological examination, who were diagnosed with RVO and who agreed to take part in the study were included.

Not included:

- All patients seen for other pathologies.
- All patients who did not agree to take part in the study.

Data was collected in the following stages:

- When the patient was admitted, we took his general information and read the Parinaud scale, which gave us his visual acuity. We then proceeded to question the patient, noting the reasons for consultation, the patient's history and the presence of any comorbidities.
- Thanks to the FO, the ophthalmological examination was able to detect patients probably suffering from RVO. At the end of the examination, once the diagnosis of RVO had been confirmed, further tests were ordered:
- Ophthalmological: Macular OCT; OCT angiography.
- Aetiological.
- Once the results had been obtained, therapeutic measures were put in place according to the different lesions observed.
- Once we had obtained the patient's informed consent to use their entire file, we proceeded to collect the data.

We carried out exhaustive recruitment by including all patients who met our various selection criteria.

Our variables were qualitative and quantitative and included socio-demographic, clinical, paraclinical and therapeutic data.

Survey forms were completed as and when a patient met our inclusion criteria:

- The data was processed manually.
- The literary data was entered and the tables compiled using Word and Excel from the 2019 Office pack.
- The data collected were analysed using EPI INFO software version 7.2.5.0, and the results were presented in the form of tables and figures. The qualitative variables were used to calculate proportions and ratios; the quantitative variables were used to calculate means, standard deviations and medians.

The data was collected from patients with their free and informed consent and then processed confidentially and anonymously, for strictly scientific purposes.

Results

During the study period, we saw 3,612 patients, of whom only 6% (23 cases) were seen for CRVO, while 3,589 patients were seen for other conditions.

We divided our patients into age groups with a regular range of 10 years and extremes from 25 to 72 years. The age group between 51 and 60 years was the most affected, with 10 cases, representing a frequency of 43.4%. The mean age of our patients was 55.17 years.

When broken down by gender, 57% of the patients were male and 43% female. The sex ratio was 1.3.

By socio-professional category, civil servants were the most represented at 43.4%, followed by housewives at 26% and blue-collar workers at 17.3%.

The majority of our patients (59%) lived in urban areas, 32% in peri-urban areas and only 9% in rural areas.

Decreased visual acuity was the most frequently reported reason for consultation in 16 cases, followed by visual blur in 13 cases, eye pain in 9 cases, routine ophthalmological examination in 4 cases and headache in 1 case.

The main risk factors found were arterial hypertension in 60.8% of cases, diabetes in 34.7% of cases, CAPM in 21.5% of cases, stress in 17.4% of cases and no associated risk factor in 8.7% of cases.

AV	Right eye		Left eye	
	Eff	(%)	Eff	(%)
AV ≤ 1/10	11	47,8	11	47,8
2/10 - 5/10	9	39,1	6	26
AV '5/10	3	13	6	26
Total	23	100	23	100

Table 1: Distribution of the 23 patients with RVO received at CADESSO between 01 July and 31 December 2022 according to their visual acuity.

In the right eye, intraocular pressure was normal in 65.2% of cases (between 10 and 21 mm Hg) and hypertone (greater than 21 mm Hg) in 34.7% of cases. In the left eye, IOP was normal in 69.5% of cases and hypertensive in 30.4%.

Examination of the fundus after maximum dilation with a Volk lens or a 3-mirror glass revealed tortuous, dilated veins in 91.3% of cases; flaming haemorrhages in 69.5% of cases; cottony nodules, deep sheet haemorrhages and papilledema in 26% of cases each.

Depending on the topography of the RVOT, it was a CRVO in 70% of cases and an RVOT in 30%.

A breakdown by laterality showed that 52% of the patients were affected in the right eye, 43% in the left and 4% bilaterally.

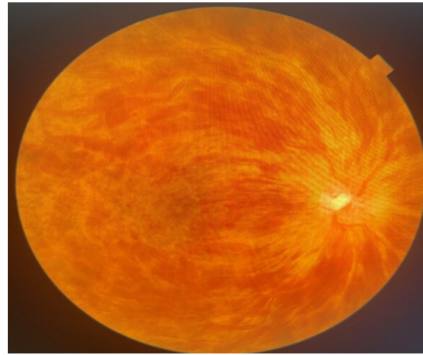
OCT confirmed the complication as papilledema in 73.9% of cases and macular oedema in 23.5% of cases.

Level of ischaemia	Workforce	Percentage
Non-ischaemic	15	65,2
Minimal ischaemia	05	21,7
Moderate ischaemia	01	04,3
Marked ischaemia	02	08,6
Total	23	100

Table 2: Distribution of 23 patients with RVOT received at CADESSO between 01 July and 31 December 2022 according to the level of ischaemia.

In terms of treatment, the majority of cases involved anti-VGEF injections (65.2%), argon laser treatment (26%) and combined treatment (anti-VGEF and argon laser) (17.3%).

Iconography

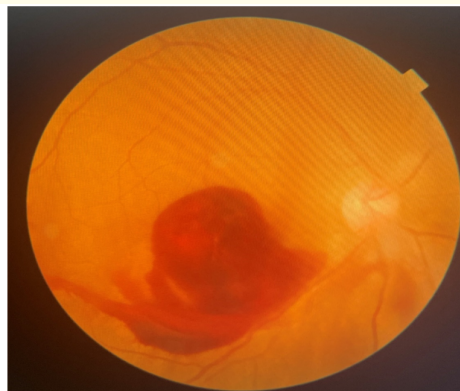


Picture 1: The patient was 59 years old and presented with VAD and ocular pain at the OD; he had a history of diabetes and hypertension.

The fundus shows:

- Tortuous and dilated vessels
- Superficial haemorrhages in flashes
- Papilloedema and
- Macularoedema.

Diagnosis: Severe ischaemic CRVO according to the CRETEIL classification.

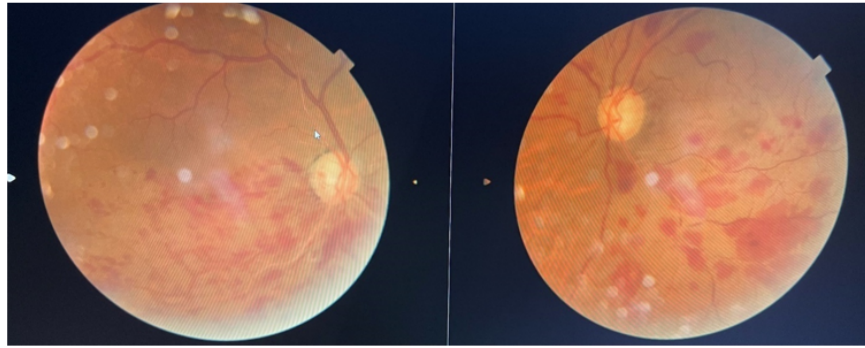


Picture 2: The patient was 57 years old and presented with VAD, visual blur and ocular pain at the OD; she had a general history of diabetes.

The fundus shows:

- Tortuous and dilated vessels.
- Deep sheet haemorrhage.

Diagnosis: Non-ischaemic CRVO according to the CRETEIL classification.



Picture 3: The patient was 56 years old and presented with BA, ocular pain and ODG visual blur. He had a general history of diabetes and hypertension and an ophthalmological history of glaucoma.

At the back of the eye:

- Tortuous and dilated vessels ODG
- Deep haemorrhages in ODG spots
- OD exudates.

This is non-ischaemic RVOT according to the CRETEIL classification.

Discussion

From 01 July to 31 December 2022, a total of 6 months, we conducted a descriptive cross-sectional study to document the epidemiological, clinical and therapeutic aspects of retinal vein occlusions at CADESSO. In the course of this study, we recorded 23 cases of RVO out of a total of 3,612 patients, i.e. a frequency of 6%.

One of the main difficulties in our study was the lack of financial means for some patients to carry out repeat IVT in certain cases.

These screened patients all met our inclusion criteria and therefore formed our study population.

The mean age of our patients was 55.17 years. This result is close to that of Fiebai B., *et al.* [9] in Nigeria in 2014 who reported a mean age of 54.8 years. Other authors, such as Thapa R., *et al.* [6] in Nepal in 2017, reported a higher mean age: 61.1 years. RVOT can occur at any age, even in very young subjects. However, age is considered a risk factor from the age of 60.

Males predominated in our study. This result is similar to that of Uhumwangho O., *et al.* [10] in Nigeria in 2016, who found a male predominance of 70%. It should be noted that being male is a risk factor for the occurrence of RVOT.

The socio-professional category most represented among the respondents was civil servants. Our result is contrary to that of Odoulami L., *et al.* [8] in Benin in 2018, who reported a predominance of shopkeepers.

The majority of our patients came from Conakry; this could be justified by the geographical location of our study setting.

VAD was the main reason for consultation during our study, as in Odoulami L., *et al.* [8] in Benin in 2018 with a rate of 100%. Macular oedema, which is the most frequent complication of RVO, is an important cause of VAD. Its often rapid onset during the course of the disease could justify VAD being the main complaint of patients.

Arterial hypertension (AH) was the most common general antecedent in our study, followed by diabetes. This result is consistent with those of Koki G., *et al.* [11] in Cameroon in 2018 who found respectively 21.42% and 17.14% for hypertension and diabetes. There is still no consensus on all the risk factors mentioned in the various publications. In the Anglo-Saxon literature, hypertension and diabetes are established as risk factors, whereas in the French literature, diabetes is considered to be only an aggravating factor.

Regarding ophthalmological history, glaucoma was the most represented, as well as in Ajayi A., *et al.* [12] in Nigeria in 2017 with 51.3%. It was reported as the most predisposing ocular factor for RVO, with involvement in both RVO and RVO [13].

Most of the eyes examined had a visual acuity of less than 1/10 on both the right and left. This could be explained by the tendency of the population to go to a doctor as a last resort. The pathology would therefore have had time to reach the final stages of its development.

On the fundus, venous dilatation was an almost constant lesion (91.6%), followed by haemorrhage (69.5%). Koki G., *et al.* [12] in Cameroon in 2018 found these lesions at a rate of 100%.

In our series, OVCR were twice as frequent as OBVR and OVHR were absent. Ayena D., *et al.* [14] in Togo in 2018 made the same observation with 67.64 of OVCR in their series. The trend seems to be reversing in some studies, such as that of Koki G., *et al.* [7] in Cameroon, who found 73.68% cases of OBVR. It is interesting to note that RVOTs can be pauciously symptomatic, depending on the branch of vein involved, and have a slightly better visual prognosis according to Gaudric A., *et al.* [15]. As a result, patients will not seek medical attention in the same time frame as those with RVOT, and many cases would therefore go unnoticed in our context.

Only one case of simultaneous bilateral involvement was found in our study. Prager F., *et al.* [16] in Switzerland also reported a single case of bilateral involvement in a series of 28 patients. These observations, although infrequent, could be justified by the fact that arterio-venous risk factors can affect all vessels in general and those of both eyes simultaneously.

On OCT, the vast majority of our patients presented with macular oedema. The same was true of the study by Ajayi A., *et al.* [17] in Nigeria in 2017: 56.4%. As for macular thickness, the average in our series was 596 microns, close to the result of Glacet-Bernard., *et al.* [18]: 640 microns.

Non-ischaemic forms predominated in our study. The same observation was made by Vonor K., *et al.* [19] in Lomé in 2015 with 78.6% of non-ischaemic forms.

Intravitreal anti-VEGF injections were the most commonly used therapeutic method with 65.22% compared with 26.09% for physical laser treatment. Our results are consistent with those of Ajayi A., *et al.* [19] who found that 61.53% of patients underwent anti-VEGF injections compared with 11.5% who underwent laser treatment.

Conclusion

RVOT occurs at any age, with a higher frequency in subjects over 60 with vascular risk factors.

Diagnosis is easy, based on a simple fundus examination, given the typical clinical picture.

Risk factors are dominated by hypertension and diabetes.

Treatment includes IVTs, which are indicated for the treatment of macular oedema; this treatment has been shown to improve visual acuity.

Laser photo coagulation treatment has two aims: to treat macular oedema and to prevent complications of retinal ischaemia.

Recent and rapid advances in biology, genetics and pharmacology, as well as new imaging techniques, have enabled us to gain a better understanding of the mechanisms of these RVOs and, consequently, to treat them more effectively.

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