

RETRO BULBAR OPTIC NEUROPATHY IN BURKINA FASO: EPIDEMIO CLINICAL AND THERAPEUTIC ASPECTS

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ABSTRACT

Introduction

Considering the high number of cases of retrobulbar optic neuropathy in our department, it seemed appropriate to study their epidemiological, clinical and therapeutic aspects.

Material and Methods

This is a prospective study from February 2006 to September 2010, including patients with retrobulbar optic neuropathy which the diagnosis was suspected by a complete ophthalmologic examination and confirmed by an automated visual field. HIV screening test has been proposed to patients. Data processing was done by the Epi-info 3.4.3 software.

Results

On 3100 Consultants including 59% of female gender, we recorded 274 patients with retrobulbar optic neuropathy with 148 female gender (54%), 117 housewives, 46 students. The average age was 25.5 years. The mean visual acuity was 3/10 in each eye. Retrobulbar optic neuropathy started in 35 women during pregnancy or breastfeeding. We observed a hypoacusia in 11 patients, paresis of lower limbs in 9 and a lips inflammation in 19 patients. Four patients were seropositive for HIV 1 and 2. The average period of consultation of our patients was 22.96 months after the beginning of the visual acuity loss. The treatment consisted of association of corticosteroids and vitamins. When there was an improvement of visual acuity, it was obtained after an average of 2.11 months.

Discussion

The deficiency symptoms are accessible to preventive and curative treatment if caught early, while other causes are difficult to cure.

Conclusion

Many cases of retrobulbar optic neuropathy seem related to micronutrient deficiency. There is therefore an interest to supplement the diet of certain risk groups in poly-vitamins such as children, pregnant and breastfeeding women. Moreover, a study on the cyanide content of some fairly common foods and their impact on eye health should lead to improve the elimination of cyanide in these preparations.

Keywords: optic neuropathy, causes, blindness, treatment, Africa.

INTRODUCTION

The retrobulbar optic neuropathy (RBON) is a retrobulbar attack of the optic nerve, characterized by a decrease of visual acuity without any ophtalmoscopic sign at its beginning. It is about the pathology of multiple etiologies that can let as a sequel, partial or total pallor of the papilla. Considering the large number of RBON cases in our service, it seemed appropriate to study the relevant epidemiologic, clinical and therapeutic aspects in order to possibly prevent the onset and effects.

MATERIALS AND METHODS

Our study took place in a structure of the 2nd level of the health scale in Burkina Faso (BF), Ouagadougou at the sector 30 of CMA from May 2006 to December 2009. In this prospective study, we selected all RBON cases confirmed after a complete eye examination and some diagnostic tests, including automated visual field and color vision examination test. An etiological including, among others the retroviral serology (HIV), the TPHA-VDRL was performed. The doubtful cases have been excluded. We're noted age, sex, backgrounds, the consultation delay, profession, associated factors, initial and final visual acuity, the ophtalmoscopic aspect of the papilla, the IOP and The improvement of the visual acuity. We called child all patients of 15 years and under; adults all patients of more than 15 years. The analysis was conducted with Epi info software 3.3.2. Statistical tests were used for comparing the χ^2 proportions, the test "Student" or analysis of variance for the comparison of averages. The error threshold allowed to be 5%.

RESULTS

During our study period, we had 3100 consultants and 41% of male gender (MG) and 59% of the female gender (FG) Among them, 247 subjects or 7.96% of our consultants had RBON which 113 (45, 7%) of MG, and 134 (54.3%) of the FG With a sex ratio of 0.84. The average age was 25.12 years with a median of 23 years and extremes of 4 years and 68 years. There were 33 children of 15 years and under whose average age was 12.93 years and 15 were female (45.5%) and 18 were male (54.5%). There were 214 adults that had more than 15 years whose average age was 27 years (16-68 years), and 119 (55.6%) were female and 95 (44.4%) male gender.

The age groups from 10 to 19 were (31.20%) and we counted 107 patients in the age groups from 20 to 29 years (43.30%) (figure1). most of our RBON patients were pupils, students, unemployed, jobless (table1).

The predominant factors associated to RBON were breastfeeding, parotiditis, hearing loss, pregnancy (Table 2), patients consulted for loss of visual acuity. This loss of visual acuity evolved since an average of 24.72 months (table3).

The examination of the fundus showed that 76.80% of the right papilla and 80, 20% of the left papilla had paled (Figure 2 and Figure 3)

The average PIO of the right eye was 14mmHg (minimum at 7mmHg, maximum at 25mmHg), that of the left eye was 14.3 mm Hg (minimum 7 mm Hg, maximum 27mm Hg) (Table 4 and Table 5).

The treatment of our patients showed an improvement of the visual acuity (table 6, table 7, Table 8, table 9) by 58.1% at a mean time of 2.11 months. That improvement had been observed in most cases in the patients (52.4%) that have consulted the first three months of the disease.

We did not find any correlation between the earlier consult and the quality of the visual acuity improvement. Associated factors had an impact on the age-group, resulting in a statistically significant value ($p=0.00361$). The population consultation period was also related to the profession($p=0.0074$), the poorest consulted later.

DISCUSSION

RBON is a large group of various diseases etiology^{1, 2, 3} having in common a poor clinical exposure limited to a pallor of the papilla associated or not to a decrease of visual acuity⁴. RBON frequency was 7.96% in our study when Traoré⁵ in Mali noticed a frequency of 5.7% considerably lower than ours.

Thus, RBON would be more frequent in our community comparable to that of Mali. The average age of our patients was 25.12 years showing that the RBON in B.F preferentially touched young individuals who are from the underprivileged classes (92.7%). This is indeed about individuals leading a non-remunerative professional activity (pupils and students, unemployed) (48.2%), housewives (27.9%) and workers from the informal sector (15.8%).

These are persons whose diet are not varied and of poor quality considering their derisory financial status. The financial conditions reflect the quality of life, but also the quality of medical care in our African countries where health insurance remains accessible only to a certain social class⁶.

Thus, the moderate-income households and poor people still have a poor medical care as long as medical coverage would be not available for all. It was also establishes a correlation

between the profession and the consultation period of our patients ($p = 0.0074$), confirming the impact of income on access to modern health facilities in developing countries.

Some optic neuropathies from deficiency have been described in some populations with limited food options and also in individuals with a strict vegan diet without vitamin supplementation following a neurological dysfunction⁷.

Pernicious anemia by default of vitamin absorption due to a self-immune reason would be RBON provider according to the literature⁸. Therefore, a blood test for a vitamin dosage in all our patients with progressive bilateral optic neuropathies would be necessary in search of etiologies.

The unknown RBON etiologies should not be occulted because many substances and another disease are able to generate this pathology⁹. The female gender was majority with 54.3%, corresponding to a sex ratio of 0.84 and the average duration of the evolution of the BAV before the first examination was higher at 2 years (24.72 months). Poverty and the great dependence of female gender in Africa would be the cause¹⁰

The consultation of children was on average rather than adults showing that parents usually take care of the health of their children more than their own health. Factors associated with RBON were multiple variables (breastfeeding, hearing loss, perleche ...) with a predominance in female patients.

It was also established a correlation between the associated factors and the type of (NORB) ($p = 0.0337$) suggesting that the fight against the associated factors could reduce (RBON) rate in our communities.

The decrease of visual acuity remains the essential symptom observed in our patients. It was also well observed both in the right and the left eye with an average of 3.2/10 in both eyes. The improvement of the initial average of visual acuity in 58.1% of our patients after 2.11 months of treatment with corticosteroids and vitamin supplementation leads easy to conclude that our patients was affected in majority by RBON from nutritious and deficient origin as observed in Cuba.⁷

However, a study on the content in cyanide and its impact on the ocular health showed that the cyanide was involved in the occurrence of RBON¹¹. These results should incite to improve the cyanide extraction of some food stuffs quite frequent in Africa. The deficiency troubles, causes of RBON, indeed, are accessible to the preventive and curative treatment if precociously there are taken into account, whereas the other etiologies are curable with difficulty¹². The demyelinating forms of ischemic origin could well respond to the

corticosteroids according to Giorgi¹³ The iatrogenic causes could be linked to a mechanism of deep immune-suppression attached to the treatment with anti-TNF alpha fostering the production of antibody anti TNF with the expansion of auto-immune pathologies destroying myelin sheathes¹⁰. However, these are iatrogenic toxic origin non-reactive to the corticosteroids. When the consultation time is short, visual recovery is better as observed with our patients seen in the first 3 months of the disease, although it has not been drawn a correlation between the consultation period and the quality of visual acuity ($p = 0.0515$).

Conclusion

Many cases of retrobulbar optic neuropathy seem related to micronutrient deficiency. Also, it seems interesting to supplement in multivitamins the food of certain risk groups such as children, pregnant women and lactating especially as infant feeding continues until the age of 2 years in our context. An awareness by the media about the need to vary the diet could still be helpful. A study on a larger scale should be undertaken to better understand all the contours of RBON in Burkina Faso.

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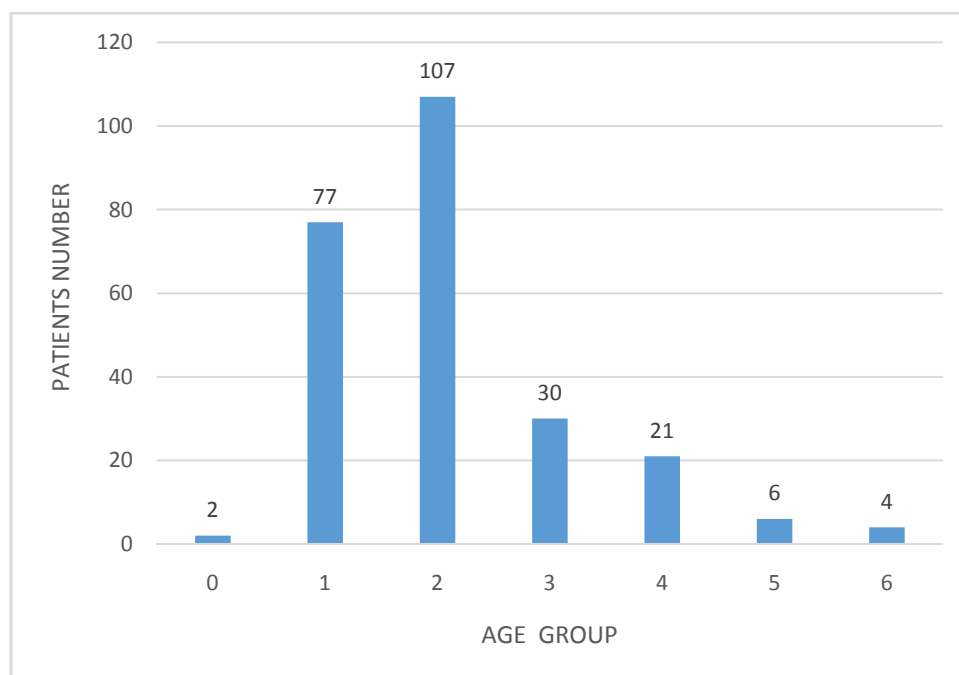


FIGURE 1: REPARTITION OF PATIENTS SUFFERING FROM RBON BY AGE GROUPES

Legend: Age groups

0 : 0 to 9 years

1 : 10 to 19 years

2 : 20 to 29 years

3 : 30 to 39 years

4 : 40 to 49 years

5 : 50 to 59 years

6 : 60 to 69 years

PROFESSIONS			
	MALE (M)	FEMALE (F)	STUDY POPULATION
pupils, students, unemployed, jobless	68 (60.2%)	51 (38.4%)	119 (48.2%)
Informal sector	29 (25.5%)	10 (7.7%)	39 (15.8%)
Wage earners	3 (3.2%)	2 (1.3%)	5 (2%)
Retired	2 (1.6%)	0 (0%)	2 (0.8%)
Private sector	11 (9.5%)	2 (1.3%)	13 (5.3%)
Housewife	0 (0%)	69 (51.3%)	69 (27.9%)

Table 1: Distribution of patients affected by RBON according to their profession

FACTORS ASSOCIATED TO THE RBON					
	MALE		FEMALE		STUDY POPULATION
	CHILD	ADULT	ADULT	CHILD	
Nursing			17	0	17
Pregnancy			9	0	9
Paresthesia of limb	0	2	6	0	8
Hypoacusia	0	0	11	1	12
Perleche	0	9	7	1	17
Hiv+	0	2	3	0	5
CGOA	0	1	0		1
Family backgrounds of decrease visual acuity	0	1	0	0	1
Parotiditis	0	1	0	0	1
Tuberculosis	0	1	0	0	1
Chicken pox	0	0	1	0	1

Table2: Distribution of factors associated by the RBON according to the sex of the patients and according to their membership to the group of child or adult.

DURATION OF EVOLUTION OF THE BAV (IN MONTH) BEFORE THE CONSULTATION					
	MALE		FEMALE		STUDY POPULATION
	Child	ADULT	Child	ADULT	STUDY POPULATION
AVERAGE	6,78	24,90	5,12	28,80	24,72
MINIMUM	0,25	0,13	1	0,13	0,13
MAXIMUM	12	168	12	266	266,66

Table 3: Distribution of patients with NORB by elapsed time before the consultation

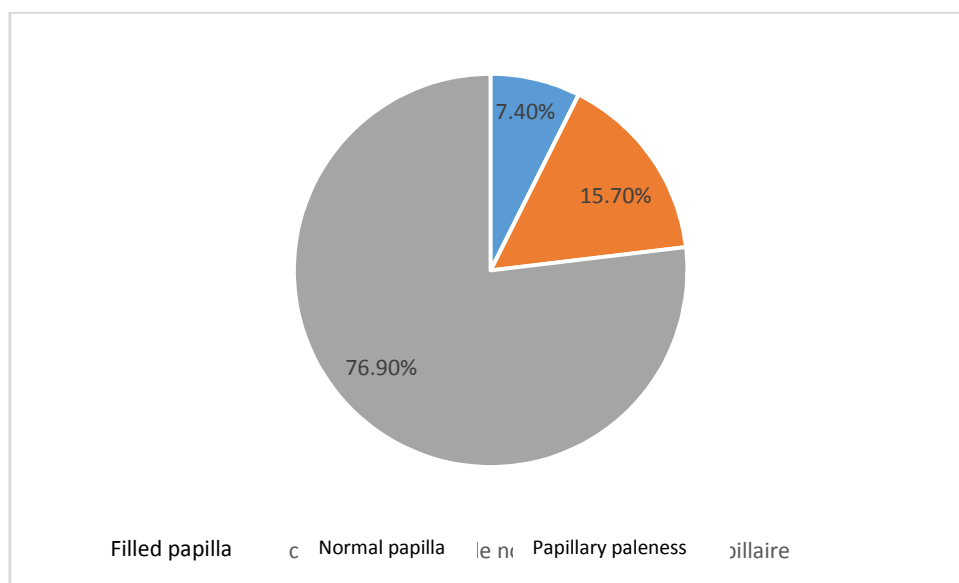


Figure 2: Aspect of the right papilla of the patients having a RBON.

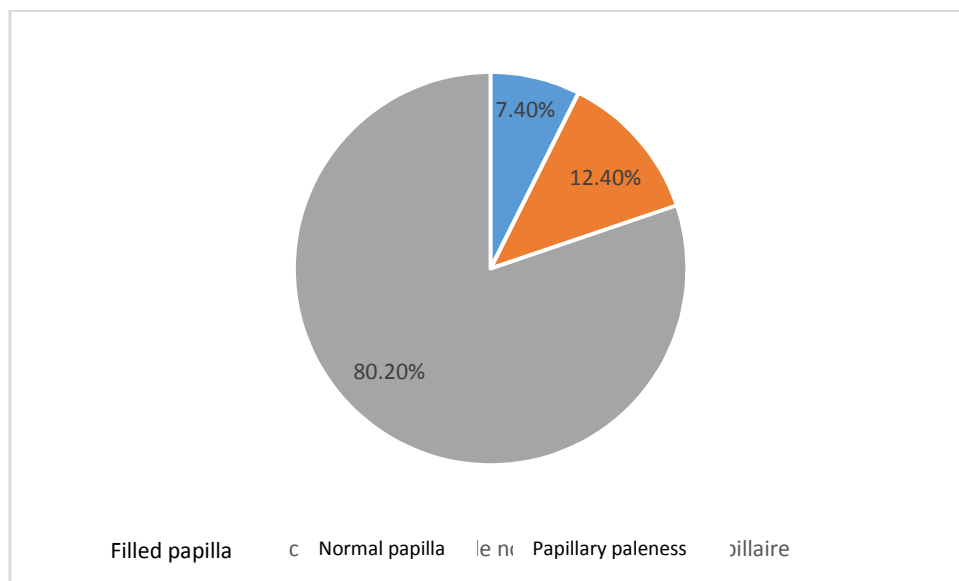


Figure 3: Aspect of the left papilla of the patients having a RBON

RIGHT INTRAOCULAR PRESSURE (mmHg)					
	MALE		FEMALE		STUDY POPULATION
	CHILD	ADULT	CHILD	ADULT	
AVERAGE	13,7	14,3	14,4	13,8	14
MINIMUM	8	7	10	8	7
MAXIMUM	18	23	16	25	25

Table4: Distribution of the average of the measure of the right intra pressure eye of the patients affected by RBON

LEFT INTRAOCULAR PRESSURE (mm Hg)					
	MALE		FEMALE		STUDY POPULATION
	CHILD	ADULT	CHILD	ADULT	
AVERAGE	13,4	14,2	14,8	14,4	14,3
MINIMUM	8	8	8	7	7
MAXIMUM	18	22	18	27	27

Table5: Distribution of the average of the measure of the left intra pressure eye of the patients affected by RBON

INITIAL RIGHT VISUAL ACUITY /10					
	MALE		FEMALE		STUDY POPULATION
	CHILD	ADULT	CHILD	ADULT	
AVERAGE	2,2	3	4,4	3,3	3,2
MINIMUM	0,2	0,05	0,5	0,1	0,05
MAXIMUM	8	10	10	10	10

Table6: Distribution of the average of the measure of the initial right visual acuity of the patients affected by RBON

FINAL RIGHT VISUAL ACUITY /10					
	MALE		FEMALE		STUDY POPULATION
	CHILD	ADULT	CHILD	ADULT	
AVERAGE	3,6	3,9	6,8	3,7	4,08
MINIMUM	1	0,2	1	0,5	0,2
MAXIMUM	10	10	10	10	10

Table 7: Distribution of the average of the measure of the final right visual acuity of the patients affected by RBON

INITIAL LEFT VISUAL ACUITY /10					
	MALE		FEMALE		STUDY POPULATION
	CHILD	ADULT	CHILD	ADULT	
AVERAGE	2	2,8	4	2,9	3,2
MINIMUM	0,2	0,05	0,5	0,05	0,05
MAXIMUM	8	10	10	10	10

Table 8: Distribution of the average of the measure of the initial left visual acuity of patients affected by RBON

FINAL LEFT VISUAL ACUITY /10					
	MALE		FEMALE		STUDY POPULATION
	CHIL D	ADULTE	CHILD	ADULT	
AVERAGE	4,3	3,5	6	3,5	3,8
MINIMUM	0,5	0,2	1	0,05	0,05
MAXIMUM	10	10	10	10	10

Table9: Distribution of the average of the measure of the final left visual acuity of the patients affected by RBON