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RESEARCH ARTICLE

BLINDING OCULAR DISORDERS AND DIABETES IN PATIENTS FOLLOWED IN ABIDJAN IN 2015

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ABSTRACT

Chronic diseases such as diabetes and eye complications are a public health problem in the world and in developing countries such as Côte d'Ivoire. A study was conducted at the National Institute of Public Health with the aim of measuring the extent of blinding ocular diseases in diabetic patients. This was a cross-sectional study of patients followed at the Abidjan Antidiabetic Center of the National Institute of Public Health from June to December 2015. The data were collected from patients using pre-tested questionnaires and from an interview and acomplet eophtalmological examination. The collected data were entered on the EPI data software and processed on the SPSS 12.0 software. 376 patients were recruited during this period. It was a population with an averageage of 54 years predominantly female (sex ration H / F of 0.67). The average duration of diabetes reported was 10 years and type II diabetes predominated. The prevalence of low vision (28.5%) and blindness (5.3%) were high. The most common blinding ocular conditions in diabetic patients followed in our study were cataract (32.7%) and diabetic retinopathy (15.4%) and glaucoma (14%). Given the socio-economic weight of this public health problem, the consideration and implementation in the health system of mass screening interventions and programs coupledwith the early management of diagnosed cases becomes a priority.

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INTRODUCTION

Diabetic disease has been a major public health problem for some decades and is now considered a global development problem. Oms estimatesthat 422 million adults were living with diabetes in 2015, compared to 108 million in 2006. 1980 and that the global economic cost of diabetes worldwide was estimated at $ 1310 billion in 2015. The prevalence of diabetes in Côte d'Ivoire is estimated at 5.7% and from 3 to 7.05% in hospitals (Zmiroud, 1979). The number of new cases of diabetes recorded each year at the Abidjan Antidiabetic Center (CADA) ranges from 1,000 to 1,500 (Institut National de Santé Publique d'Abidjan (Côte d'Ivoire), 2006-2010). Although few surveys have been carried out, the prevalence of blindness is estimated at more than 1.2% in West African countries where the number of visually impaired people is 2,540,000 and the number of blind people in the order of 880,000. However, 80% of visual losses can be avoided. In Côte d'Ivoire, the prevalence of blindness can be estimated at 1.5% of the general population, iearound 330 000 blind people (Programme National de Santé Oculaire de lutte contre l'Onchocercose (Côte d'Ivoire), 2013-2015). New data based on world population in 2002 shows a decrease in the number of people who are blind or visually impaired, particularly due to infectious causes and an increase in the number of people who are blind or visually impaired due to chronic noncommunicable diseases like diabetes. Eachyear, itis estimated that 4.8% of people become blind because of diabetes and overall it is estimated that after 15 years of diabetes, 2% of diabetics are blind and 10% suffer from low vision (Sawadogo, 1996-1997). The interest of thiswork was to measure the extent of blinding ocular diseases in the diabetic subject at the CADA of the National Institute of Public Health Adjoined (INSP).

Objectives

The overall objective of this work was to determine the prevalence of ocular conditions of the diabetic patient in Abidjan.

The specific objectives were:

- Describe the socio-demographiccharacteristics of the population of diabetics seen in ophthalmology consultations
- Estimate the prevalence of blinding ocular conditions during diabetes.

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MATERIALS AND METHODS

1) Framework of the study

The studywasconducted in Côte d'Ivoire at the National Institute of Public Health (INSP) located in the center of the city of Abidjan. Establishedin 1968, this institute is under the supervision of the Ministry of Health and Public Hygiene with the main missions of public health research; training in public health and service delivery.

It houses the anti-Diabetic center of Abidjan (CADA) which is national and supports more than 80% of diabetics followed by outpatients throughout the country.

2) Type of study

It was a cross-sectionalstudy of diabetic patients followedat the Anti-Diabetic Center of Abidjan.

3) Duration of the study

The studyranfromJune to December 2015.

4) Study population

The study population consisted of diabetic patients who came to the CADA for consultation and thenreferred for their ophthalmic examination as part of their impact assessment at the ophthalmic service during the survey period. Any patient who has given informed consent, regardless of age and sex and regardless of the type of diabetes.

4-1 Inclusion Criteria

Any patient with type 1 or type 2 diabetesregardless of agefollowedat CADA.

4-2 Criteria for non-inclusion

Any patient sufferingfrom a pathologyotherthandiabetes, likely to cause cataract, glaucoma or macularedema, was not retained.

5) Sampling

During the studyperiod, wes elected all patients who met the inclusion criteria. A total of 376 diabetic patients wereincluded for ourstudy.

6) Data collection

6-1 Data collection technique

Data collection wasbased on a pre-tested questionnaire submitted to diabetic patients in an individual interview after their free and informed consent. Demographic data were collected after a patient interview and clinical data after a complet eophthalmological examination.

6-2 Data Collection Tool

The clinical data were object if iedduringa complete ophthalmological examination including:

- The measurement of visualacuity from far and nearusing a test projector to assess the visualdeficit to differentiate between normal patients, the visually impaired and those with blindness.
- Slitlamp examination for opacification of the lens.
- Taking intraocular pressure with the Goldmann aplationtonometer in search of intraocularhypertonia.
- An examination of the fundus with an ophthalmoscope looking for diabeticretinopathy or diabeticmaculopathy.

7) Analysis and data processing

- The collected data were coded and then entered on the EPI data software. The data was then processed on the SPSS 12.0 software. and Excel 2007;
- The surveywas cross-sectional and the relevant variables retained in the study were represented in the form of statistical summaries (proportion, average, framing tables and figures). The proportion comparisons were made by the chi-square test at the 5% level.

RESULTS

Sociodemographiccharacteristics

There is a female predominance of the order of 60% with a sex ratio H / F of 0.67. The 45 to 64 age group was the most affected by diabetes with 60% of cases. Patients with lower secondary education were the most affected at 58%. Patients in professions were the most affected with 33.9% of cases.

Table 1. Distribution of Diabetes by Sociodemographic Characteristics of Diabetics

	Effectif (n=372)	Pourcentage ( )
Sexe		
Male	150	40
Female	226	60
Age		
9-34	19	5
34-44	56	15
44-54	105	28
54-64	128	34
64-74	64	17
74-91	15	4
Niveau d'instruction		
Any	143	38
Primary	80	21,3
Secondary	102	27,1
High study	50	13,5
Profession		
Student	4	1,1
No occupation	57	15,2
Household	127	33,9
Official	36	9,6
Private employee	23	6,2
Liberal profession	127	33,9

Diabetes Characteristics of Followed Patients

Table 2. Diabetes Distribution by DiscoveryCircumstances

Circumstances of discovery	Effectifs	Pourcentage (%)
Ophthalmic Consultation (FO)	27	7,2
Checkup	74	19,7
Complications	272	72,3
autresother	3	8
Total	376	100

The diabetes is discovered in more than 7.2% at the time of an ophthalmological consultation.

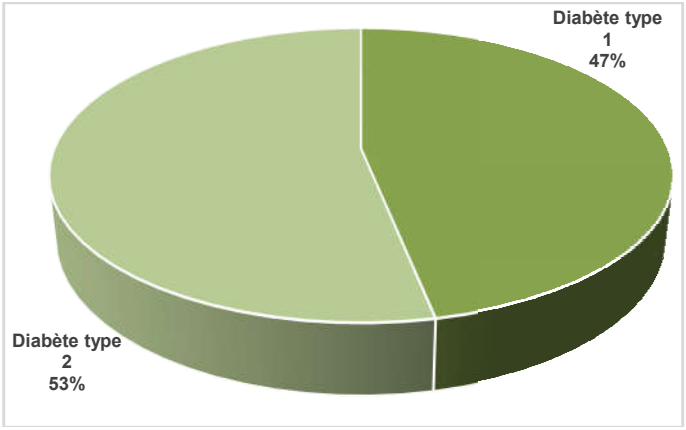

Figure 1. Distribution of Followed Patients by Type of Diabetes
53% of patients withdiabetes are type 2.

Prevalence of the visual deficit

Table 3. Distribution of patients by visual impairment

Déficit visuel	Effectif	Pourcentage
Normal	249	66,2
VisuallyImpaired	107	28,5
Blindness	20	5,3
Total	376	100,0

The prevalence of blindnesswas 5.3%.

Table 4. Distribution of Diabetic Patients by Blinding Ocular Conditions

	Effectif	Pourcentage (%)
Diabeticretinopathy	57	15,4
Cataract	122	32,7
Glaucoma	52	14
Macularedema	22	5,9

The most common blinding ocular conditions in diabetic patients followed in our study were cataract (32.7%) and diabetic retinopathy (15.4%) and glaucoma (14%).

DISCUSSION

Socio demographic characteristics

In Cameroon, Moukoury in a similar study notes a male predominance of 3 men for 1 woman (Moukouri *et al*., 1992). In an epidemiological study on diabetesmellitusat INSP, Oga *et al*. (2006) find a male predominance with a sex ratio of 1.37. In our study we recruited 376 patients with diabetes. It was noted a male predominance with 60% of men for 40% of women or a sex ratio of 0.76. N'goieMaloba in Lubumbashi found an average age of 57.32 years and a sex ratio of 1.2 men for a woman (Ngoie Maloba *et al*., 2012). Waked *et al*. in Lebanon find an average age of 60.98 years with a sex ratio of 1.43 in favor of men. The average duration of onset of diabetes is 10 years in our study and the average age of 54 years with extremes ranging from 9 years to 91 years. The high average age of diabetic patients found in our study as well as in other African and Oriental studies may be related to longer life expectancy and therapeuticprogress. The age group most affected by diabetes is those over 55 years old, and type 2 diabetes predominates with 65% of cases. Someauthors including Moukouri (31.34% type I and 58.80 type II) Several studies note a prevalence of type 2 diabetesincluding Balo (Balo *et al*., 1995). 82.7%, Sawadogo (Sawadogo, 1996-1997). 82.2%, Oga (Oga *et al*., 2006) 88.5% and NgoieMaloba (Ngoie Maloba *et al*., 2012). 71.5%. Our results corroborate with the literature where it is accepted that it is type 2 diabetes or diabetes of maturity that is most common between 50 and 70 years of age (Kanski *et al*., 2006). In Africa the lowsocioeconomic status of patients has often been noted as a major factor in the onset of the disease (Zmiroud, 1979; Lokrou *et al*., 1994). Patients with no education level are the most affected in the order of 38%. It could then be said that illiteracy is also a factor that should not be neglected in the approach to understanding the extent of diabetes.

Prevalence of blindingocular conditions

In our study, the prevalence of cataracts during diabetes was 32%. In DR Congo, MvitoMuaka in Congo found a prevalence of 33% of cataracts during diabetes. It is recognized that there is an association between diabetes mellitus and cataracts. It is therefore not surprising that cataracts are most of ten associated with retinal complications of diabetes mellitus. The prevalence of glaucoma 14.1%. Gbe (2009) found 40.6% of glaucomatous patients. The prevalence of diabetic retinopathy was 15.4%. N'goieMalobafinds a 12.7% prevalence of DR in Lubumbashi. Gbe observes 15% of RD on population of 207 diabetics. Godefroy finds a prevalence of R & D of the order of 42%. The literature review shows that in sub-Saharan Africa, the prevalence of R & D is between 15 and 52% (Sidibe, 2000). This value of R & D is in the range of 7 to 50% elsewhere in Africa (Descamps and Demailly, 1990; Diallo, 1972). In Lebanon Waked. N found a prevalence of R & D of 16.96%. In Europe, the frequency of diabetic retinopathy varies from 50 to 70% (Klein *et al*., 1995; Regriault, 1975), and thishigher value could be linked, apart from genetic factors and to the difference between the methods of investigation, to the longer life expectancy of Europeans. The frequency of diabetic macular edema is 5.9% in our study and there was a male predominance of about 6.3%. Z. Berkani in Algeriafound an MDG frequency of around 8.7% with a female predominance of around 53.6% but there was no gender influence on the WCO frequency (Berkani *et al*., 2015). Godefroy found an MDG prevalence of around 10.6% (Koky, 2010). Increasing the management of systemic risk factors has significantly reduced the prevalence and incidence of diabetic macular edema in industrialized countries where the prevalence of macular edema is in the order of 3%. The main risk factors for diabetic macular edema are the duration of diabetes, the poor control of diabetes and blood pressure (Catherine and Pascale, 2016). In ourstudy, 0.8% of diabetic patients had complicated proliferative diabetic retinopathy; while Ngoie in DR Congo found 0.27% proliferative diabetic retinopathy complicated in 369 patients or only 1 patient (Ngoie Maloba *et al*., 2012). The prevalence of cataracts during diabetic retinopathy was in the order of 48%. The prevalence of glaucoma during diabetic retinopathy was 20%. 98% of patients with glaucoma are in the age group above 40 years and women are the most affected with cataracts with 33%. Health personnel should know how to give diabetic patients the necessary and sufficient information regarding the actual risks of late complications of diabetes mellitus and the need for regular follow-up. The aim is to make diabetics aware

of the regularity of all tests that are useful for controlling and monitoring the risk factors for diabetic retinopathy.

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Conclusion

Diabetes remainsa major cause of blindness for the visually impaired. The frequency of blindingocular complications isvery high among diabetics in the anti-diabetic center in Abidjan. It is therefore necessary to introduce a preventionpolicy by screening with a focus on finding risk factors for visual impairment. The management of diabetic disease is multidisciplinary and the exchange of information between practitionersis essential.

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