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Epidemiological Profile of Type 2 Diabetics Hospitalized at the Internal Medicine Unit of the Fousseyni Daou Hospital in Kayes, Mali

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Abstract **Original Research Article**

Diabetes is defined as a complex and chronic metabolic disorder characterized by a partial or total deficiency of insulin or, more commonly, by a decrease in the sensitivity of the target cells causing an increase in blood glucose. ***Objective:*** describe the profile of type 2 diabetic patients hospitalized in the department. ***Methodology:*** This is a retrospective descriptive study of 67 records of type 2 diabetic patients hospitalized from January 1 to December 31, 2020 in the Internal Medicine Unit of the Fousseyni Daou Hospital in Kayes. Result: We counted 67 diabetic patients hospitalized out of a total of 200 patients hospitalized in the Unit, i.e., a prevalence of hospitalization of 3.35%. The 60 to 69 age group was the most affected in 27 cases (40.30%), with an average age of 58 years. Females predominated in 36 cases (53.73%) with a sex ratio of 0.86. The Soninke ethnic group was the most represented with 17 cases (29.82%). Most of our patients were housewives 31 cases (46.27%), farmers 14 cases (20.91%). The majority of our patients were married, 43 cases (75.44%), 32 patients (56.14%) were of urban origin. High blood pressure was the most common antecedent with 28 cases (41.79%). The most frequent reason for hospitalization was diabetic foot with 31 cases (46.27%). The main clinical signs noted were: Systemic inflammatory response syndrome 25 cases (34.72%) and altered general condition 16 cases (22.22%). On admission 49 patients (73.13%) had hyperglycemia. We noted in our patients a glycemic imbalance in 52 cases (73.13%). Creatininemia, micro albuminuria and LDLC were abnormal in 20 (29.85%), 13 (19.40%) and 24 (35.82%) cases respectively. Insulin therapy was initiated in 57 patients (85.07%). The average length of hospitalization was 9.5 days. During this study period, 52 patients were discharged (77.61%); 2 cases were referred for amputation (2.98%); 2 cases were referred for renal failure (2.98%); 5 were discharged against medical advice (7.46%); 6 died (8.35%). ***Conclusion***: Diabetes is a complex metabolic disorder constituting an incurable chronic disease. A poorly conducted treatment leads to glycemic imbalances which are responsible for numerous acute or chronic complications leading to hospitalization.

Keywords: Type 2 diabetes, hospitalization, internal medicine, Fousseyni Daou hospital in Kayes, Mali.

INTRODUCTION

Diabetes is the first non-communicable disease recognized by the United Nations as a global health threat. It is defined as a complex and chronic metabolic disorder characterized by partial or total insulin deficiency or, more commonly, by a decrease in the sensitivity of target cells causing an increase in blood glucose levels [1].

When blood sugar levels are not restored by treatment and diet, numerous complications will appear, particularly at the vascular level, which, over time, will cause serious health problems, in particular cardiovascular, renal, ocular or nervous problems [2]. These complications are usually associated with its late management, which will be difficult and requires multidisciplinary involvement [2].

Today, diabetes affects more than 415 million people in the world, i.e. 8.8% of world prevalence, and is responsible for one death every 6 seconds, i.e. more than AIDS, tuberculosis and malaria [1]. In Africa, more than 2/3 of diabetics are not diagnosed.

The WHO (World Health Organization) predicts that by 2025, the number of diabetics will increase by 70% in developing countries against 41% in developed countries [2].

The number of people with diabetes in Africa will increase by 98.1% over the next 20 years, from 16 million in 2017 to 28 million in 2030 [1].

In Mali, the prevalence was estimated in 2012 to be 9.3% at the national level and 12.8% in the district of Bamako [3], in 2017 the IDF (International Diabetes Federation) estimated it to be 2.3% [1].

Despite the frequency and severity of complications of type 2 diabetes sometimes leading to hospitalization, we have little data to describe this aspect in our department.

Thus, we conducted this study to describe the profile of type 2 diabetic patients hospitalized in the Internal Medicine Unit of the Fousseyni Daou Hospital in Kayes.

METHODOLOGY

This is a retrospective descriptive study of 67 diabetic patients hospitalized from January 1 to December 31, 2020, i.e. a period of 12 months. The criteria were as follows:

Inclusion criteria

All patients with type 2 diabetes hospitalized in the Internal Medicine Unit of the Fousseyni Daou Hospital in Kayes during the year 2020 were included in the study.

Exclusion criteria

Non-diabetic patients, non-hospitalized type 2 diabetic patients, type 2 diabetic patients hospitalized outside the study period, type 2 diabetic patients hospitalized outside our department, patients with type 1 diabetes, gestational diabetes and secondary diabetes were excluded from the study. Anonymity and confidentiality of results were assured.

Operational definitions

The diagnosis of type 2 diabetes mellitus was based on the following criteria:

- Patients aged 40 years and older, obese, overweight or normal weight
- When the fasting blood glucose level (on whole blood) was higher than 1.26 g/l (6.1 mmol/l) on two fasting occasions, or when the blood glucose level was higher than 2 g/l (11.1 mmol/l) two hours after an oral load of 75 g of glucose; or random blood glucose level higher than 2 g/l associated with the cardinal signs: polyuria, polydipsia, polyphagia, weight loss.

We retained as biological standards for the different examinations

- Creatinine: Male = 60 to 120 µmol/l; Female = 53 to 120 µmol/l
- Uricemia: Man = 149 to 416 µmol/l; Woman = 89 to 357 µmol/l
- Total cholesterol: 1.50 to 2.5 g/l
- LDL cholesterol: 1.10 to 1.52 g/l
- HDL cholesterol: 0.40 to 0.65 g/l
- Triglyceridemia: 0.65 to 1.6 g/l
- Microalbuminuria: < 30mg/24h
- glycated hemoglobin (HbA1c): < 6.5

The data were collected directly on a survey form from the files of type 2 diabetics and from the consultation registers available in the archives of the Internal Medicine Unit. Statistical analysis was performed using SPSS 20.0 French version. The statistical test for comparison was Pearson's chi-square. A P value less than or equal to 0.05 was considered statistically significant.

RESULTS

Out of a total of 200 patients hospitalized in the internal medicine unit, we counted a total of 67 diabetic patients hospitalized, which corresponds to a prevalence of 3.35% of hospitalization.

The age group 60 to 69 years was the most represented, i.e. 40.30%, with an average of 58 years, the extremes being 40 and 92 years (see Table 1).

Females were more represented with a sex ratio of 0.86 (see Table 2). The Soninke ethnic group was the most represented with 17 cases (29.82%).

Most of our patients were housewives 31 cases (46.27%), farmers 14 cases (20.91%), 32 patients (56.14%) were of urban origin.

High blood pressure was the most common antecedent with 28 cases (41.79%). Diabetic foot was the most frequent reason for hospitalization with 31 cases (46.27%) (see Table 3).

Systemic inflammatory response syndrome was the most frequent clinical manifestation 25 cases (34.72%) (see table 4).

On admission, 49 patients (73.13%) had hyperglycemia greater than 1.26g/l (see Table 5). Poor glycemic control was observed in 57 patients (85.07%) (see Table 6),

Creatininemia, micro albuminuria and LDLC were abnormal in 20 cases (29.85%), 13 cases (19.40%) and 24 cases (35.82%) respectively. In terms of therapy, 57 cases of our hospitalized patients were treated with insulin, i.e. 85.07% (see Table 7).

In our study, the average length of hospitalization was 9.5 days (see Table 8). The outcome of our hospitalized patients was marked by: 52 patients discharged cured (77.61%), 2 cases referred for amputation (2.98%), 2 cases referred for dialysis (2.98%), 5 cases of discharge against medical advice (7.46%), and 6 cases of death (8.96%). (See table 9).

Table-1: Age distribution of patients

Age range (year)	Workforce	Percentage (%)
40 - 49	4	5,97
50 - 59	16	23,88
60 - 69	27	40,30
70 - 79	14	20,90
80 - 89	5	7,46
90 - 99	1	1,49
Total	67	100

Table-2: Distribution of patients by gender

Sexe	Workforce	Percentage (%)
Masculin	31	46,27
Féminin	36	53,73
Total	67	100

Table-3: Distribution of patients by reason for hospitalization

Reason for hospitalization	Workforce	Percentage (%)
Ceto-acidosis	2	2,98
Hyper osmolarity	4	5,97
Hypoglycemia	3	4,48
Diabetic foot	31	46,27
Wound of the hand	7	10,45
Malaria	5	7,46
Typhoid fever	6	8,95
Respiratory disease	6	8,95
Vomiting	3	4,48
Diarrhea	3	4,48
Dehydration	2	2,98
	67	100

Table-4: Distribution of patients by clinical signs

Clinical signs	Workforce	Percentage (%)
Systemic inflammatory response syndrome	25	34,72
Cough	6	8,33
Conjunctival pallor	1	1,39
Vomiting	3	4,17
Dysuria	4	5,55
Dehydration	2	2,78
Alteration of the general condition	16	22,22
Peripheral neuropathies	6	8,33
Diarrhea	3	4,17
Epigastralgia	6	8,33
Total	72	100

Table-5: Distribution of patients by admission blood glucose values

Blood glucose	Workforce	Percentage (%)
< 0,79	6	8,96
0,80 -1,20	3	4,48
1-1,20	9	13,43
>1,26	49	73,13
Total	67	100

Table-6: Distribution of patients by diabetes control (HbA1c)

HbA1c	Workforce	Percentage (%)
Balance (< 6,5%)	10	14,93
Imbalance (> 6,5%)	57	85,07
Total	67	100

Table-7: Distribution of patients by treatment

Treatment	Workforce	Percentage (%)
Oral antidiabetics + Diabetic diet	7	10,45
Insulin + Diabetic diet	57	85,07
oral anti-diabetics (OADs) + Insulin + Diabetic diet	0	0
Diabetic diet alone	3	4,48
Total	67	100

Table-8: Distribution of patients by length of hospitalization

Duration of hospitalization (days)	Workforce	Percentage (%)
1 à 5	7	10,48
6 à 10	19	28,36
11 à 15	24	35,82
16 à 20	13	19,40
21 à 25	3	4,48
26 à 30	2	2,98
>31	0	0
Total	67	100

Table-9: Répartition des patients selon l'évolution

Evolution	Workforce	Percentage (%)
Deaths	6	8,96
Exit healed	52	77,61
Referral for amputation	2	2,98
Referral for dialysis	2	2,98
Exit against medical advice	5	7,46
Total	67	100

DISCUSSION

In our study, the prevalence of hospitalization of diabetic patients was 3.35%. ELIAS B M. [4] in a 5-year retrospective study of morbidity and mortality due to diabetes mellitus in adults hospitalized in internal medicine in Kissangani found a hospital prevalence of 8.65%.

The sex ratio was 0.86. METIDJI Hakima & ZEKOUM [5] in a study of type 2 diabetes hospitalized at the EPH of Bouira found a sex ratio of 1; ELIAS B M. [4] found 197 or 60.06% of male subjects against 131 (39.94%) of female subjects, i.e. a sex ratio of 1.5.

The results of this work showed that the most represented age group was 50-79 years, according to METIDJI Hakima & ZEKOUM Imane [5] the most frequent age group was 60-80 years. For DALI-SAHI M. *et al*. [6], the most represented age group was 40-54 years. ELIAS B M [4], found that the majority of the subjects had an age greater than or equal to 60 years, i.e. 60.06% [4].

The mean age in our study was 58 years. METIDJI Hakima & ZEKOUM Imane [5] in Morocco, MAKHLOUF S. *et al*. [7], CAMARA B D. [8], ELIAS B M [4] had found respectively a mean age of 68 years; 59.64 years; 56.15 years; 57 years.

In our study, the diabetic foot was the most frequent reason, 31 cases or 50.88%. For ELIAS B M [4] the hospitalization of 92.07% of patients was related to acute complications of diabetes.

The systemic inflammatory response syndrome was the most frequent clinical sign with 25 cases (34.72%), while METIDJI Hakima & ZEKOUM [5] had found 12%.

Hyperglycemia was present in 73.13% of diabetics on admission, METIDJI Hakima & ZEKOUM Imane [5] had found hyperglycemia in 90% of diabetics; DALI-SAHI M. *et al*. [6], showed that more than 70% of diabetics had a blood glucose level exceeding 1.26 g/l.

In our study, glycemic control was poor (Hba1c > 6.5g g/dl) in the vast majority of patients with 85.07%. METIDJI Hakima & ZEKOUM Imane [5] had found a poor glycemic control of 62.4%, CAMARA B D. [8], found a poor glycemic balance in 68.0%.

The average duration of hospitalization in our study was 9.5 days. For ELIAS B M [4] 46.34% of the patients had stayed 5 days at most, METIDJI Hakima & ZEKOUM Imane [5], CLAUDE *et al*. [9] had found respectively an average duration of hospitalization of 14 days; 15 days.

On the therapeutic level, 85.07% of our hospitalized patients were treated with insulin. METIDJI Hakima & ZEKOUM Imane [5] had reported 72% of insulin treatment; for AMADOU F. [10], and SAWADOGO S. [11], treatment with oral antidiabetic drugs (OADs) was in the majority.

At the end of hospitalization, we recorded 52 patients discharged cured (77.61%), 2 cases referred for amputation (2.98%), 2 cases referred for dialysis (2.98%), 5 cases discharged against medical advice (7.46%) and 6 cases of death (8.96%). METIDJI Hakima & ZEKOUM Imane [5] found a death rate of 6%; CAMARA B D [8], found 5.3% of deaths.

CONCLUSION

The complications of diabetes are avoidable by targeted and adapted preventive measures, are a frequent reason for hospitalization, and represent a considerable human and economic burden for the patient and his family. It therefore seems essential to reinforce preventive measures for people with diabetes.

REFERENCES

1. Fédération Internationale du Diabète (IDF). (2017). Diabetes Atlas, 8ème édition, 113-141.
2. OMS: Rapport mondial sur le diabète 2016. Catalogage à la source: Bibliothèque de l'OMS https://apps.who.int/iris/bitstream/handle/10665/254648/9789242565256-fre.pdf
3. Ministère de la santé du Mali. (2012). Fédération Internationale du Diabète, Diabetes Atlas 5e édition. Mise à jour, 2-30
4. ELIAS, B.M. (2019). Morbi-mortalité due au diabète sucré chez l'adulte en médecine interne, Mémoire de fin d'étude, Munich, GRIN Verlag, http : //www.grin.com/document/496670
5. Metidji, H., & Zekoum, I. (2017). Etude rétrospective descriptive des cas du diabète de type 2 hospitalisés au niveau de l'EPH de Bouira au cours de l'année 2016. Mémoire de fin d'études, UAMOB/F.SNV.ST/DEP.BIO/2017
6. Dali-Sahi, M. (2012). Étude De L'épidémiologie Du Diabète De Type 2 Dans Des Populations Endogames De L'Ouest Algérien. 13, n°2, P18-24.
7. Makhlouf, S., Chahboub, S. (2015). Evaluation des facteurs de risque chez les diabétiques au niveau de Ain defla. Mémoire de fin d'études: Régulations Endocriniennes et Physiopathologies. P09-10-20-21-46.
8. Camara, B.D. (2014). Les accidents vasculaires cérébraux au cours du diabète de type 2 dans le service de médecine interne CHU-PG. Thèse de Doctorat. P 10-11
9. Claude, J. (2012). Morbi-mortalité du diabète sucré chez l'adulte de Kisangani. Mémoire online Biologie et Médecine. P12.
10. amadou, F. (2015). Contribution a une Meilleure Prise En Charge Financière Du Diabète Au Niger. CESAG: Mémoire de Fin d'Etudes En Gestion des Programmes de Santé. P5.
11. Sawadogo, S. (2014). Etude rétrospective d'une cohorte de diabétiques maliens à partir des registres de consultations ambulatoires remplis du 01 janvier 2012 au 31 mars 2013 dans
12. Structures de santé. Bamako. Université des Sciences, des Techniques et des Technologiques de Bamako : Thèse de Doctorat 02 Mai 2014.