



Diabetic Foot: Epidemiological and Clinical Aspects at the Internal Medicine Unit of the Fousseyni Daou Hospital in Kayes

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Abstract

Original Research Article

Introduction: The diabetic foot is a frequent and serious complication of diabetes. The aim of this study is to determine the epidemiological profile, clinics of the diabetic foot at the Internal Medicine Unit of the Fousseyni Daou Hospital in Kayes. **Methods:** Descriptive retrospective study carried out from January 1, 2019 to December 31, 2019 (12 months) at the Internal Medicine Unit of the Fousseyni Daou Hospital in Kayes. Were included in the study, all patients hospitalized during the study period for diabetic foot. **Results:** The prevalence of diabetic foot was 46.26%. The age group of 50 -59 was the most represented with 41.94%. The average age was 49 years with extremes of 30 years and 79 years. The female sex predominated with a sex ratio of 0.63. Type 2 diabetes was found in 96.77% of patients. The average duration of diabetes was 9 years with an extreme of 1 year and 25 years. The mechanism of occurrence of foot lesions was dominated by the pustule 25.96% followed by the trauma 19.65%, the bite 16.13%, the intertrigo 12.90%. The main microangiopathic complication was dominated by neuropathy 70.97%. The most common types of foot lesions were: necrosis 22.58%; abscess 19.35%; ulceration 16.13%. The wound was classified according to the classification of the University of Texas: Stage B Grade 2: 45.16% followed by Stage B Grade 3: 22.58% and Stage D Grade 3: 16.13%. **Conclusion:** Foot lesions are common in diabetic patients at Kayes Hospital. The fight against this scourge involves educating patients and training healthcare personnel (nurses and doctors) in the management of the diabetic foot.

Keywords: Diabetic Foot, Epidemiology, Clinic, Kayes Hospital.

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INTRODUCTION

The diabetic foot includes any infection, ulceration or destruction of the deep tissues of the foot associated with neuropathy and/or obliterating arteriopathy of the lower limbs in diabetics [1]. It is a frequent and serious complication of diabetes with a high lower limb amputation rate and considerable

socio-economic and psychological consequences [2]. In Africa, foot lesions in diabetics are common and cause 15% to 25% of hospitalizations in diabetics [2, 3]. The risk is favored by the conjunction of neurological, arterial and infectious complications [4]. Poverty, lack of hygiene and walking barefoot interact and aggravate the diabetic foot [4]. At Kayes hospital, we do not have data on the diabetic foot. The objective of this study is

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to describe the epidemiological, clinical profile of the diabetic foot in our hospital.

METHODS

Our study took place at the Internal Medicine Unit of the Fousseyni Daou Hospital in Kayes, which is the regional reference structure. This was a descriptive retrospective study of the records of patients hospitalized for diabetic foot from January 1, 2019 to December 31, 2019, i.e. a duration of 12 months. All type 1 or type 2 diabetic patients hospitalized for diabetic foot were included. Diabetic patients without diabetic foot and non-diabetic patients were not included.

We retained the diagnosis of diabetic foot in front of any infection, ulceration or destruction of deep tissues of the foot associated with neuropathy and/or obliterating arteriopathy of the lower limbs in diabetics.

The data was collected on a pre-established individual survey form which was used to collect:

- Epidemiological data on the identity of the patient: surname and first names, age, sex, ethnicity, address, economic status, profession and level of education.

Clinical data:

*Related to diabetes: date of discovery, family notion of diabetes, type of diabetes, treatment followed, number of years under treatment.

*Related to the foot: the practice of foot care at home, method of discovering the wound, duration of the

wound before arrival at the health center, the first gesture made in front of the wound.

*The physical examination allowed us to:

** to measure parameters: weight, height, blood pressure, temperature, respiratory rate, heart rate, BMI.

** to look for arteriopathy of the lower limbs:

On inspection: ischemic necrosis of the ends of the toes in the form of blackening of the toes.

On palpation: the perception or not of the peripheral arterial pulses of the lower limbs (femoral, popliteal, pedal, posterior tibial pulse), cold extremities.

- To look for neuropathy:

On inspection: deformity, callus, gangrene and Charcot's foot.

On palpation: local heat, pain, poorly pitting edema, stringy or poorly perceived pedal pulses.

Data from the paraclinical examination: blood sugar, complete blood count (NFS), C-Reactive Protein (CRP), glycated hemoglobin (HbA1C), standard X-ray of the foot, arterial Doppler ultrasound of the limbs lower, swab pus from the wound.

We used the University of Texas classification to classify the diabetic foot in order to assess the severity of the lesions and the prognosis (risk of amputation).

Table I: University of Texas Classification

Wound stage	Grade de la plaie			
	Grade 0 Epithelial lesion	Grade 1 Superficial wound	Grade 2 Tendon or capsule damage	Grade 3 Bone or joint damage
Stage A -No infection -No ischemia	0%	0%	0%	0%
Stage B -Infection -No ischemia	12,5%	8,5%	28,6%	92%
Stage C -No infection -Ischemia	25%	20%	25%	100%
Stage D -Infection -Ischemia	50%	50%	100%	100%

These data were analyzed and processed with Epi Info 7.2.2.1 software. The information collected was completely confidential.

RESULTS

The study involved 31 patients with diabetic foot out of 67 hospitalized diabetic patients representing 46.26%. The age group of 50 -59 was the most represented with 13 cases (41.94%) (see Figure 1). The

average age was 49 years with extremes of 30 years and 71 years. There was a female predominance with 19 cases (61.29%) with a sex ratio of 0.63 (see Figure 2).

The majority of patients had type 2 diabetes with 30 cases (96.77%) against 1 case of type 1 diabetes (3.23%) (see Figure 3). The average duration of diabetes evolution was 9 years. Arterial hypertension (HTA) 17 cases (54.84%), was the main associated cardiovascular risk factor.

Degenerative complications were dominated by diabetic neuropathy in 22 cases (70.97%).

The mechanism of onset of the lesions was due to a pustule in 8 cases (25.81%), a puncture by sharp objects in 6 cases (12.90%) trauma in 5 cases (16.13%) (see Table 2).

The average patient consultation time was 13.77 days with extremes of 7 days and 31 days.

Mean fasting blood glucose on admission was 2.32 g/l with extremes of 2.22 and 5.04 g/l. The average

glycated hemoglobin was 8.36% with extremes of 7.9 and 15%.

The site of the wound was the toes in 29.03% of cases (see Table 3). The most common types of foot lesions were: necrosis 7 cases (22.58%); abscess 6 cases (19.35%); ulceration 5 cases (16.13%) (see table 4).

The wound was classified according to the classification of the University of Texas: Stage B Grade 2: 14 cases (45.16%) followed by Stage B Grade 3: 7 cases (22.58%) and Stage D Grade 3: 5 cases (16.13%) (see Table 5).

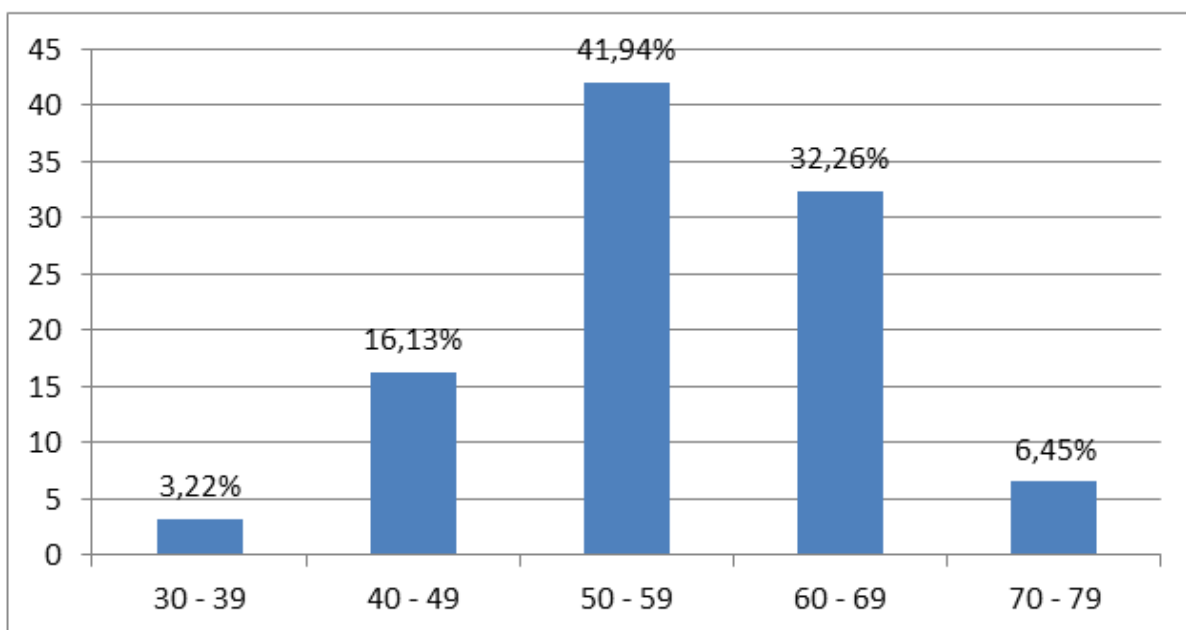


Figure 1: Distribution of patients by age

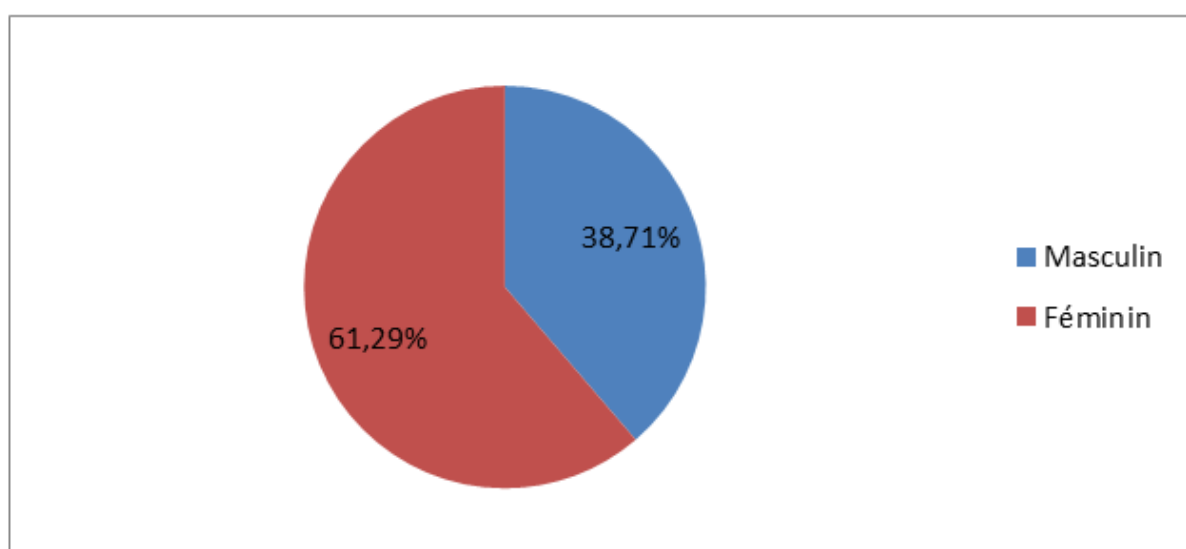


Figure 2: Distribution of patients by gender

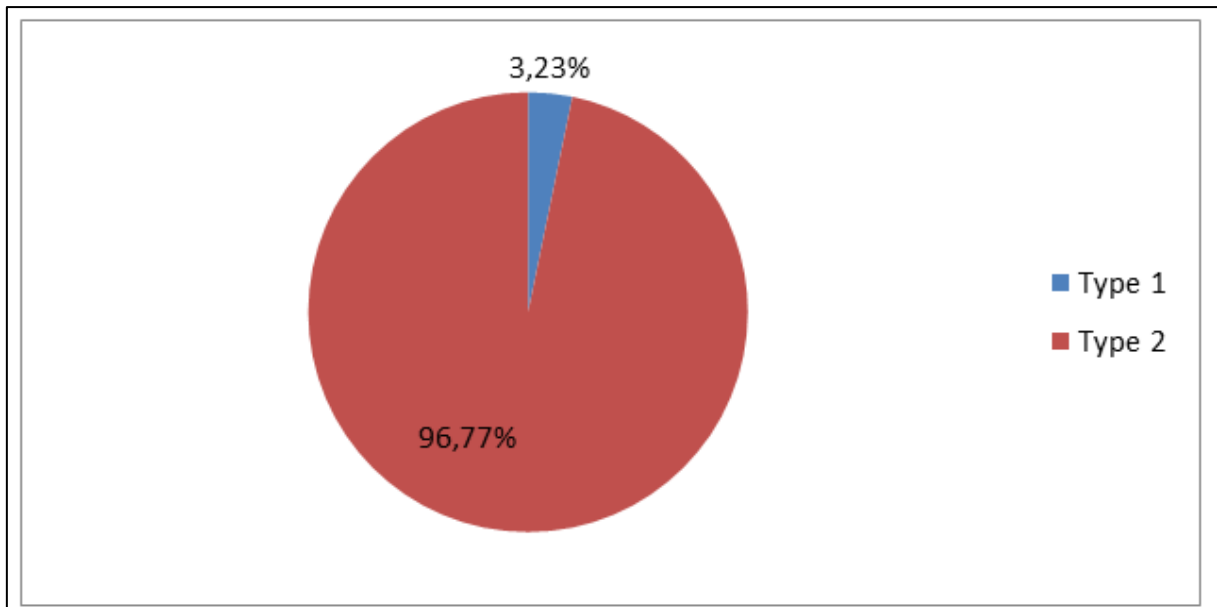


Figure 3: Distribution of patients by type of diabetes

Table 2: Distribution of patients according to the mechanisms of onset

Mechanisms of occurrence	Number	Percentage
Phlyctene	4	12,90
Pustule	8	25,81
Intertrigo	4	12,90
Chap	2	6,45
Sting by sharp object	6	19,35
Traumatisme	5	16,13
Shoe	2	6,45
Total	31	100

Table 5: Distribution of patients according to the University of Texas Classification

Stage and Grade of the wound	Number	Percentage
Stage B/ Grade 1	2	6,45
Stage B/ Grade 2	14	45,16
Stage B/ Grade 3	7	22,58
Stage D/ Grade 2	3	9,68
Stage D/ Grade 3	5	16,13
Total	31	100

Table 3: Distribution of patients according to site of lesions

Site of lesions	Number	Percentage
Leg	3	9,68
malleolus	4	12,90
Heel	3	9,68
Back of the foot	5	16,13
Toes	9	29,03
Sole	7	22,58
Total	31	100

Table 4: Distribution of patients according to type of lesion

Type of lesions	Number	Percentage
Plantar perforating pain	3	9,68
Ulceration	5	16,13
Wet gangrene	4	12,90
Dry gangrene	3	9,68
Cellulite	3	9,68
Abscess	6	19,35
Necrosis	7	22,58
Total	31	100

DISCUSSION

In our study, the frequency of diabetic foot 46.26%. Doumbia N *et al.*, [5] in Bamako; Djibril A M *et al.*, [6] in Togo and Sani R *et al.*, [7] in Niger had respectively reported a frequency of 11.35%; 12.90% and 13.90%. In our series the age group of 50 -59 was the most represented with 41.94%. For Doumbia N *et al.*, [5] the 40-60 age group was the most represented in 61.3% of cases. The average age in our study was 49 years. Doumbia N *et al.*, [5]; Djibril A M *et al.*, [6]; Sani R *et al.*, [7] found 42.66 years respectively; 60.70 years old and 53 years old. Carpentier B *et al.*, [8] reported in the European literature that the average age varied between 67 and 73 years. The male sex was predominant in our series with 61.29% with a sex ratio of 0.63. For Doumbia N *et al.*, [5] women were in the majority with a sex ratio of 0.61. Sani R *et al.*, [7] and Amoussou, G. D [9] had found male predominance with a sex ratio of 2.46 and 2.5 respectively. Jim, FC *et al.*, [10] found a sex ratio of 0.47

The average duration of diabetes in our series was 9 years with extremes of 1 year and 29 years. For Doumbia N *et al.*, [5] diabetes had been present for more than 5 years in 60.6% of patients. Djibril A M *et al.*, [6] had reported an average duration of development of diabetes of 11.67 years with extremes

of 1 year and 24 years. Amarir M *et al.*, [11], reported an average duration of development of diabetes of 13.52 years at the Military Hospital of Instruction Mohammed (HMIM) V in Rabat. In our study, the cardiovascular risk factors associated with diabetes were hypertension in 54.84% of cases and sedentary lifestyle (lack of sport) in 38.71% of cases. Djibril A M *et al.*, [6] had found hypertension as cardiovascular risk factors, followed by dyslipidemia, and obesity. In the study by Amarir M *et al.*, [11] in Rabat 19.20% of patients had hypertension. In our study, type 2 diabetics accounted for 96.77% versus 3.27% for type 1. Doumbia N *et al.*, [5] had found 94.7% type 2 diabetes. Djim, FC *et al.*, [10] had found 91.5% versus 8.5% of type 1. The mechanisms of occurrence of the wound in our series were linked to a pustule 25.81%, puncture by sharp objects 19.35% and trauma 16.13%. For Djibril A M *et al.*, [6] the triggering factor for the lesions was trauma in 70.97% of cases. Amoussou G. D *et al.*, [9] reported trauma in 32.86% of cases, burns in 2.86% and the wearing of unsuitable shoes in 1.43% of cases. In our series, the seat of the wound was the toes in 29.03% of cases. For Mohamed T [12] foot lesions were in the toes in 37.8% of cases and the forefoot in 20% of cases.

In our study, the most found types of foot lesions were dominated by necrosis 22.58%; abscess 19.35%; ulceration 16.13%. For Djibril A M *et al.*, [6] foot lesions were dominated by gangrene 61.29% and ischemic necrosis 12.90%. In the series by Quassimi *et al.*, [14] 32.65% of patients presented with phlegmon, 28.57% with plantar perforating pain, 14.28% with ischemic necrosis; gangrene was found in only 8.16% of cases [14]

In our series, the severity of foot lesions marked by a high frequency of Stage B Grade 2 lesions: 45.16% of cases with a 28.6% risk of amputation according to the University of Texas classification. Doumbia N *et al.*, [5] found 29.7%. Stage D Grade 3 with 100% risk of amputation was the most present with 29.7%. Djibril A M *et al.*, [6] using the Wagner classification reported 61.29% grade 4 and 5. Djim F.C *et al.*, [10] found 10.6%. Stage D Grade 3. Gueye, D. D *et al.*, [13] found that: grade 1B lesions accounted for 34.0%, followed by 26.4% by grade 2D lesions and 24.5% by grade 3D lesions.

CONCLUSION

Foot lesions are common in diabetic patients in the Internal Medicine Unit of the Fousseyni Daou Hospital in Kayes. Patients most often consult at an advanced stage of lesions compromising the possibility of being satisfied with foot-saving gestures. Examination of the feet is an essential element during each consultation and allows early detection of lesions and feet at risk.

The fight against the diabetic foot is thus based, on the one hand, on prevention through the

education of patients and caregivers and the early detection of lesions, and on the other hand, on multidisciplinary and concerted care.

The limitations of the study:

- Retrospective study in which the collection of data came from the medical records of hospitalized patients, which were often incompletely completed (insufficient completeness of records).
- The high cost of additional examinations for uninsured patients, hence the exclusion of many patients.
- The limited sampling and the short duration of the study.

Conflicts of Interest: The authors declare no conflict of interest.

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