

## Research

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# Analysis of Mortality in a Dermatological Affections Referral Center in Sub-Saharan Africa, Abidjan, République de Côte d'Ivoire

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### ABSTRACT

**Objectives:** To document patients who died in Dermatology Department at University Teaching Hospital (UTH) of Treichville; describe epidemiological aspects; indicate the various dermatological diseases associated; specify the immediate causes; identify the determinants.

**Materials and Methods:** This was a cross-sectional study with descriptive and analytical referred. Included were all hospitalized patients died in the Dermatology and Venereology service of Treichville University Hospital from January 2000 through December 2014.

**Results:** One thousand seven-hundred and thirty-five patients were hospitalized. The hospital mortality was 10.26% (178 deaths). The average age of the death was 43.16 years; the sex ratio was 0.83. Patients who had no source of income were the most numerous (61.53%). The average hospital stay was 20.05 days. Patients had at the entrance an altered condition in 49.43% of cases and 46.62% in middle condition. Those who regularly bought their drugs were 58.21%. Those who died in the second half of the month were the most numerous (55.61%). Dermatitis groups associated deaths were: infectious dermatosis 41.57%, 29.77% tumor dermatitis and drug eruptions 16.85%. Of the 178 deaths, the 1<sup>st</sup> 3 are pathologies associated fasciitis (50 cases), Kaposi's sarcoma (46 cases) and toxic epidermal necrolysis (17 cases). Respiratory distress (41.31%) and septic shock (36.52%) were the main immediate causes of death. Anemia (41.40%), tuberculosis (10.82%) and diabetes (10.19%) were the major comorbidities. Serology was positive in 92.5% of dead patients who have realized their HIV status (n=80). Significantly associated determinants were essentially the regular bought of drugs ( $p=0.013$ ), the altered condition ( $p=0.033$ ), death hours ( $p=0.023$ ) and comorbidities ( $p=00000$ ).

**Conclusion:** Mortality is a reality in the Dermatology and Venereology at UTH of Treichville. These determinants are numerous and some need to be better studied to identify true risk factors in order to make appropriate recommendations.

**KEYWORDS:** Mortality; HIV; Dermatitis.

### INTRODUCTION

Dermatological diseases are not among the most common causes of death in sub-Saharan Africa.<sup>1</sup> However, since the advent of human immunodeficiency virus (HIV) infection which is one of the causes of death in sub-Saharan Africa, some skin diseases have become very common while others have seen their prognosis serious. Data on overall mortality from skin dis-

eases in hospital services remain very partial references in the literature. So we conducted this study to analyze mortality in a Dermatology Department of black Africa. It will specifically to describe the epidemiological aspects, indicate the various associated dermatological disease, specify the immediate causes of death, identify the determinants and measures the scalability of deaths from 2000 to 2014.

## MATERIALS AND METHODS

This was a descriptive and analytical cross study of hospitalized patients from January 2000 to December 2014 (15 years) in the Dermatology and Venereology Department of University Hospital of Treichville. Were included in the study, all patients died during the study period, regardless of the age, sex and pathology. Were not included deceased patients registered in the register of Dermatology and whose records could not be found. Data were collected from patient records on a survey sheet. The seizures and analyzes were made on the EPI-INFO 3.5.1 software. The test of chi-square ( $X^2$ ) was used for comparison of proportions and *t*-student for the comparison of averages.

## RESULTS

### Epidemiological Aspects

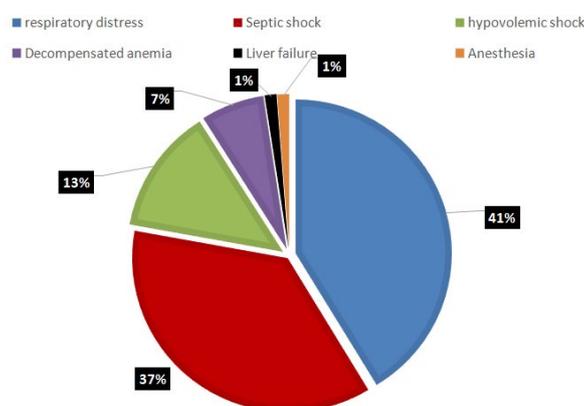
During this period of 15 years we registered in 1735 inpatients, including 178 deaths or a hospital mortality of 10.26%. The average age of patients who died was 43.16 years, ranging from 2 to 89 years. There was a male predominance with a sex ratio (M/F) of 1.19. Patients live as a couple in 51.87% of cases and by followed singles with 31.25%. They had no source of income at 61.53% and 29.48% worked in the informal economy.

### Cause of Death

Infectious skin diseases were the leading cause of death (41.57%), followed tumor dermatoses (29.77%) and drug reactions (16.85%). The list of 1<sup>st</sup> 10 diseases causing deaths is shown in Table 1 and the immediate causes in Figure 1. From 2000 to 2006, 3 leading causes of death were in ascending order Kaposi's disease, fasciitis and burili ulcer. From 2007 fasciitis has become the leading cause of death followed by Kaposi's

Pathologies	Frequency
1. Fasciitis	50
2. Kaposi disease	46
3. Lyell Syndrome	17
4. Steven Johnson	10
5. No necrotizing bacterial cellulitis	9
6. Squamous cell carcinoma	7
7. Pyodermitis	6
8. Diabetic gangrene	5
9. Escarres	4
10. Buriliulcer	3
10ex Bullouspemphigoide	3

**Table 1:** The first 10 causes of death, Dermatology and Venereology of Treichville University Hospital Service, Abidjan, from 2000 to 2014.



**Figure 1:** Distribution of deceased patients according to the immediate cause of death, Dermatology and Venereology of Treichville University Hospital Service, Abidjan, from 2000 to 2014.

Measured parameters	Variable 1	Variable 2	Statistical test
Regular purchase of medicines	Yes: 58.21%	No: 41.78%	$p=0.013$
Altered general condition	Regular purchase of drugs: 41.17%	Irregular purchasing medicines: 59.01%	$p=0.033$
Altered general condition	Regular purchase of drugs: 35	Irregular purchasing medicines: 36	$p=0.033$
Good and medium general condition	Regular purchase of drugs: 50	Irregular purchasing medicines: 25	
Death hour	08 H 30 am - 04 H 30 pm: 38.04%	04 H 30 pm - 08 H 30 am: 61.95%	$p=0.023$
Week days	Working day: 74.71%	Non-working day: 25.28%	$p=0.000$
Month period	1 au 15: 44.38%	15 au 31: 55.61%	$p=0.15$
Morbidity condition	Morbidity: 85.35%	No morbidity: 14.64%	$p=0.00000$

**Table 2:** Statistical tests performed in patients who died, Dermatology and Venereology of Treichville University Hospital Service, Abidjan, from 2000 to 2014.

disease in 2<sup>nd</sup> place and Lyell's syndrome in third. Anemia, tuberculosis and diabetes were the main comorbidities associated of death with respectively 41.40%, 10.82% and 10.19%. HIV status was requested in 80 cases or 44.9% achievement rate. It was positive in 74 patients who died according to 92.5%.

#### Determinants of Mortality

The average hospital stay was 20.05 days, with a range from 1 to 143 days. Deceased patients were 1<sup>st</sup> hospitalized in service in 93.25% of cases. Their general condition was impaired or medium at the entry with respectively 49.43% and 46.62%. They regularly bought their drugs in 58.21%. Comorbidity was associated in 85.35% of cases. The patients who died were in 61.95% between 4:30 pm to 8:30 am; in 74.71% they died at working days of the week; 55.61% in the second half of the month. The determinants significantly associated with death ( $p<0.05$ ) are shown in Table 2.

#### DISCUSSION

The death rate found in our study was slightly higher than that of Tollhupp-Journet et al<sup>2</sup> in France and Keita et al<sup>3</sup> in Guinea with 9% and 7.90%, far higher than Nair et al<sup>4</sup> 3.58% in India in Dermatology services. Compared to those of studies conducted in Côte d'Ivoire in other services, our mortality rate substantially corresponds to that found by Dekou A et al<sup>5</sup> (10.1%) in a urology Abidjan. This high mortality rate could be explained by the fact that the patients arrived at a very advanced stage. Indeed, nearly half of deceased patients (49.43%) came in an altered condition. The average age of the deceased patients in our study was 43.16 years. In France, according Tollhupp-Journet et al<sup>2</sup> the average is 71. This age difference could be partly explained by the unfavorable socio-economic and structural conditions in developing countries, unlike France where most patients supported was the end-of-life for metastatic melanoma. Life expectancy is highest in France with regard to the quality of life (QoL) and care, life expectancy in Côte d'Ivoire being 54.1 years according to the National Institute of Statistics (NIS).<sup>6</sup> In our study, patients who died live as a couple were the most numerous with 83 cases or 51.87%. This high rate of cohabitants, highlighted the socio-cultural and economic problems of widows, widowers and orphans in our country after the death. This is consistent with the study of Channon Mandal in South Africa which took place in

KwaZulu-Natal,<sup>7</sup> which found a high mortality rate among the living cohabiting couples compared to legally married couples. Deceased patients who regularly bought their medicines were the most numerous in 58.21% of cases, with a significant difference compared with those deceased who do not regularly bought their medication ( $p=0.013$ , Table 2). Among the deceased patients who regularly bought their drugs, there was far more infectious and tumorous skin with 42.35% and 37.64% respectively. It also noted many more patients with a general altered health or medium to entry with respectively 39.77% and 54.21%. Can we understand the severity of the condition and severity of disease would condition the purchase of medicines? Further studies will allow us to better argue this because there is a significant difference between the regular purchase medication or not depending on whether the condition is altered or good and moderate ( $p=0.033$ , Table 2). The patients died more frequently between 4:30 pm to 8:30 am (61.95%) with a significant difference compared to those who died between 8:30 am to 4:30 pm ( $p=0.023$ , Table 2). This time slice corresponds to a period where there are no doctors in the service. The service then based on a nursing care with coverage of medical emergencies, themselves already overwhelmed. Regarding the period of death in the month, patients who died in the second half of the month were the most numerous with 99 cases or 55.61%. The second half of the month is always difficult financially for workers especially in African countries due to multiple responsibilities. Would this position responsible for the large number of deaths? We do not think so because the regular purchase of drugs did not influence deaths in our service but rather the impaired general condition and therefore the consultation delay. Indeed, the observed difference is not statistically significant compared to the other half of the months ( $p=0.15$ , Table 2). Among the patients who died of infectious skin diseases were noted much of necrotizing fasciitis with 67.56% and 12.16% with erysipelas. Both dermatosis alone accounted for 79.72% of death among infectious dermatosis. Infectious diseases, although there is a decline in their hand, are a leading cause of death.<sup>8</sup> Infectious skin diseases are a place where 1<sup>st</sup> cause of death in service (Table 1). Acute bacterial dermohypodermatitis that are fasciitis and erysipelas are dermatological emergency with a high death rate of about 27.7% from necrotizing fasciitis.<sup>8</sup> These deaths are significantly related to complications or HIV positive land according to studies carried out in service.<sup>8</sup> Indeed in our study, 92.5% of deceased patients tested for HIV were positive. Among the patients who died of

tumor dermatosis we noted much of Kaposi's disease with 46 cases or 86.79% (Table 1). This condition is related to HIV with a predictive value in the Dermatology Department at University Hospital of Treichville 87.5%.<sup>8</sup>

#### CONCLUSION

Mortality is a reality in the Dermatology and Venereology of Treichville University Hospital. From 2000 to 2014 the rate was 10.26%. Infectious skin diseases and tumor are the main causes with as main immediate causes respiratory distress and septic shock. These determinants are numerous and some need to be better studied to identify true risk factors in order to make appropriate recommendations.

#### CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

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