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Study of Mortality and Causes of Death in the Stomatology and Maxillofacial Surgery Department of the Cocody University Hospital

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Abstract

Introduction: Mortality studies are indicators that allow for the monitoring and review of therapeutic measures in hospitals. The aim of this study was to determine the epidemiological profile of deceased patients and to analyze the circumstances surrounding their occurrence in a hospital department. Materials and Methods: This is a descriptive retrospective study conducted in the Stomatology and Maxillofacial Surgery Department of the Cocody University Hospital in Abidjan (RCI) over a 10-year period (January 2015 to December 2024). Seventy-two cases were included. Results: The crude mortality rate was 4.29%. A male predominance was noted, with a sex ratio of 1.77. The most affected age groups were the third and second decades, with 20.8% and 19.4% respectively, and an average age of 39 years. Facial cellulitis and its complications were responsible for death in 58.33% of cases. Most deaths occurred between 5 p.m. and 8 a.m. (65.28%). These deaths were preventable in 5.6% of cases. Conclusion: Given the lack of descriptions of the ultimate circumstances of death in medical records, the conclusion of this study was to implement a regular medical audit in the department, which allows for mortality monitoring with a view to reducing its rate.

Keywords

Mortality, Causes of Death, Facial Cellulitis

1. Introduction

Studying mortality in a community helps define disease prevention strategies and

readjust health policies [1]. In a hospital department, such a study allows for monitoring and reviewing therapeutic measures. These measures are likely to deteriorate in their implementation over the years, requiring periodic review. While this periodic review is systematic in various hospital departments in developed countries, in our tropics, it practically does not exist. Although numerous, deaths are not the subject of any study that would allow for an assessment of the factors and main causes of mortality. This would allow for the proposal of improvements in personnel and equipment management in order to provide quality care.

The Stomatology and Maxillofacial Surgery Department of the Cocody University Hospital, like the other departments of this leading institution, does not have a death audit unit. It therefore seems appropriate to initiate this work, which aims to:

- Determine the epidemiological profile of patients who died in our department;
- Analyze the circumstances surrounding the deaths.

2. Materials and Methods

This is a descriptive retrospective study conducted in the Stomatology and Maxillofacial Surgery Department of the Cocody University Hospital over a 10-year period (January 2015 to December 2024).

All patients who died during their hospitalization and who had up-to-date medical records were included in this study. However, patients who died before admission and those whose medical records were missing or incomplete were excluded.

After reviewing 114 files, only 72 who met the inclusion criteria were retained for the study. Information was collected from the patient's registers (admission, hospitalization, and death) and medical records.

The parameters studied were:

- Mortality indicators: the number of deaths (number of deaths per year), the crude mortality rate (ratio between the total number of deaths occurring in hospital and the total number of admissions over a given period expressed as a percentage), the specific mortality rate (mortality rate calculated according to different variables, e.g., age, sex, etc.), and proportional mortality (the share of a cause or group of causes in overall mortality).

- The analysis of deaths included: time of onset, length of stay in the department, immediate cause of death (clinical presentation at the time of death), period of onset within the month, and the concept of preventability (fatal outcome that would not have occurred if appropriate health technology had been applied to the nature of the disease and level of care). Deaths were classified as preventable, unavoidable, or inconclusive using an analytical grid inspired by WHO recommendations, taking into account compliance with care protocols, the speed of treatment, and the possible presence of clinical or organizational errors.

The data were analyzed using Epi info 2023 software in its version 7.2.6.

3. Results

3.1. Death Indicators

Out of 1675 hospitalized patients, 114 deaths were recorded, but only 72 cases were included in our study. The crude mortality rate was then 68%. The highest rate was observed in 2024 (15 cases; 6.91%) and the lowest rate in 2017 (1 case; 0.34%) (Figure 1).

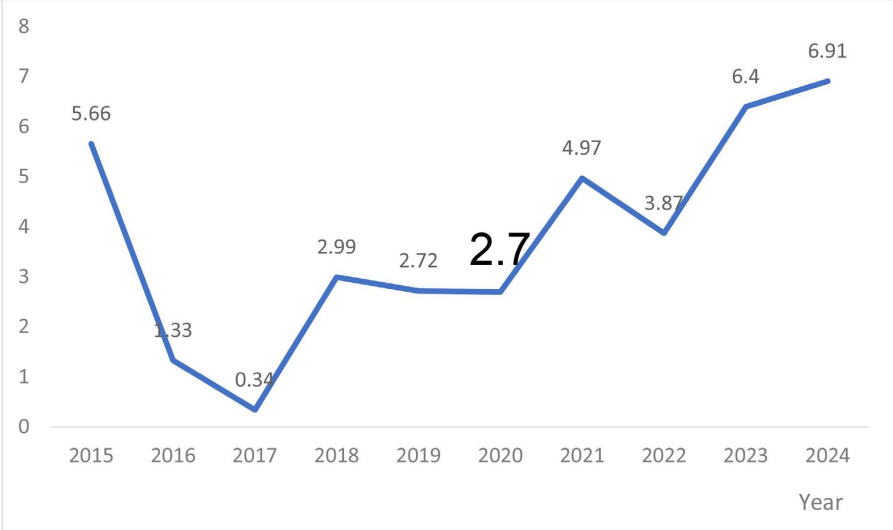

Figure 1. Distribution according to crude mortality rate by year.

The sex-specific mortality rate was 63.9% for men and 36.1% for women, representing a sex ratio of 1.77.

The age groups with the highest rates were 31 - 40 years (20.8%) and 21 - 30 years (19.4%). The mean age was 39 years and the standard deviation was 18.5. This rate was low among adults over 70 years (4.2%) (Figure 2).

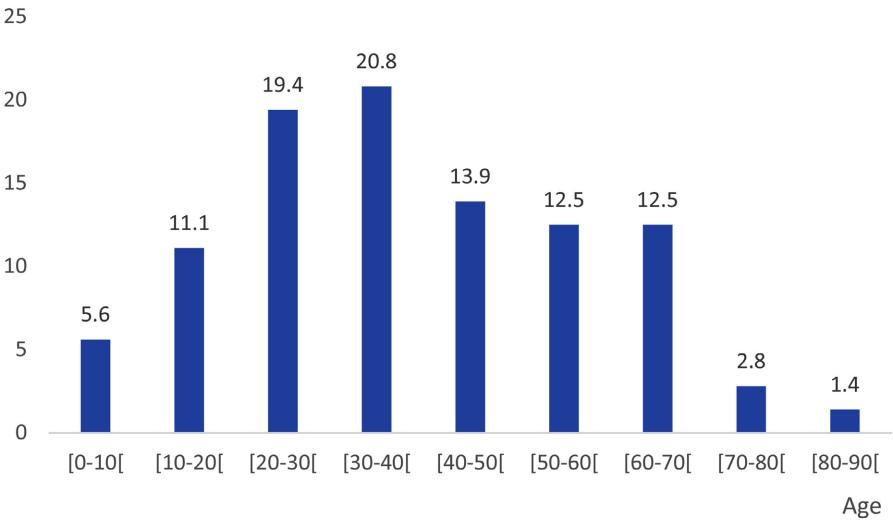

Figure 2. Distribution by age group.

More than half of the deceased patients (51.4%) were unemployed, followed by those in the liberal professions (30.6%).

Cellulitis was responsible for death in 58.33% of cases, followed by malignant tumors, including Burkitt's lymphoma (20.83%) (Table 1).

Table 1. Distribution according to proportional mortality.

Cause of death	Count	Percentage (%)
Cellulitis	**42**	**58.33**
Malignant tumors (including Burkitt's lymphoma)	15	20.83
Noma	03	04.16
Trauma	02	02.77
Osteitis	02	02.77
Lingual oedema	01	01.38
Stomatitis in HIV patients	03	04.16
Polyadenopathy	02	02.77
Complicated sinusitis	02	02.77
Total	**72**	**100**

3.2. Analysis of Deaths

Deaths most often occurred within 48 hours of admission to the ward (37.5%) (Table 2).

Approximately 65.3% of deaths occurred in the evening and at night between 6 p.m. and 6 a.m.

The circumstances of death were as follows: septic shock (43.05%) and severe anemic decompensation (16.66%) (Table 3).

These deaths were inevitable in 83.3% of cases, preventable in 5.6% of cases, and in 11.1% of cases; we were unable to draw any conclusions.

Table 2. Distribution of deceased patients according to length of stay.

Length of stay	Count	Percentage (%)
0 - 48 hours	**27**	**37.50**
3 - 7 days	16	22.22
8 - 14 days	14	19.44
15 - 21 days	6	08.33
22 - 30 days	5	06.94
31 days and over	4	05.55
Total	**72**	**100**

Table 3. Distribution of deceased patients according to clinical presentation at the time of death.

Clinical presentation at time of death	Count	Percentage (%)
Septic shock	**31**	**43.05**
Decompensated anaemia	12	16.66
Respiratory distress	08	11.11
Malnutrition + dehydration	05	06.94
Terminal stage of a malignant tumour	10	13.88
Unspecified	02	02.77
Hypovolemic shock	04	05.55
Total	**72**	**100.0**

4. Discussion

Hospital mortality during the study period was 6.8%, with peaks in 2015 (5.66%), 2023 (6.4%), and 2024 (6.91%). This rate appears high compared to that found by Sogoba (3.7%) in an infectious and tropical diseases department in Bamako [2] and Assoumou (0.16%) in a gynecology-obstetrics department in Libreville [3]. The study showed a gradual increase in the mortality curve from 2017 in our department. This is an unsatisfactory trend, unlike most hospital departments performing major surgery. It should be noted, however, that of the 114 deaths recorded during the study period, only 72 records could be included in the analysis. This difference is explained by the lack of digitization of medical records in the various departments. This is responsible for the incompleteness or unavailability of certain medical records over time. Thus, this state of affairs introduces a selection bias likely to affect the reliability and representativeness of the results. This methodological limitation must be taken into account in the interpretation of the data, and highlights the need to improve digital archiving and clinical documentation systems in our hospitals. This high mortality rate could be explained by several factors: the impoverishment of the general population leading to late consultations, the lack of diagnostic and treatment resources, the insufficient maintenance of existing equipment, and the absence of a death audit unit.

The most affected age groups were those between 31 and 40 years (20.8%) and between 21 and 30 years (19.4%), with a mean age of 39. This therefore represents the young and active population. Elsewhere in Africa, Assoumou and Sogoba [2] [3] found 30.6, 40.9, and 33 years respectively in Libreville and Bamako, while Fouillet in France found a mean age of 85 years [4].

Men were more affected, with a sex ratio of 1.77. This result was consistent with the excess male mortality found in almost all studies [5] [6]. The majority of deceased patients were unemployed (51.4%), and therefore generally poor people with care difficulties. Cellulitis was the leading cause of death (58.33%), followed by malignant tumors including Burkitt's lymphoma (23.83%). Bakary, in a previous study in the same department, found cellulitis to be the leading cause of hos-

pitalization [7]. These results were almost identical to those of the WHO, which classified the causes of mortality in developing countries in descending order as follows: infectious and parasitic diseases, respiratory diseases, and cancers [8] [9].

Deaths were more frequent between 6 p.m. and 6 a.m. (65.28%). This period corresponds to the time of activity of the on-call team. This was a small team with a doctor, a nurse, and a nursing assistant responsible for hospitalized patients as well as those admitted in emergencies. The observation of higher mortality during this period raises a hypothesis that nighttime working conditions, particularly the high workload and the inexperience of certain teams, could negatively influence the quality of care. However, the current study does not allow us to establish a direct causal link between this excess mortality and the lack of experience of the staff or the workload. This hypothesis deserves to be explored further in the context of a targeted and in-depth medical audit, which could systematically analyze nighttime working conditions, the skill level of the on-call staff, the resources available at night, and their potential impact on patient outcomes. According to Takongmo, who found similar results, this suggests a lack of quality care during shifts [10].

In 37.5% of cases, death occurred within 48 hours of admission. This could be explained by the fact that our patients generally arrived with complications. The traditional treatment of traditional healers is also an aggravating factor, as patients, due to insufficient financial means, begin with this type of treatment [11] [12].

Septic shock was the immediate cause of death in 43% of cases, followed by decompensated anemia in 16.66% of cases. These deaths were avoidable in 4 cases (5.6%) and in 8 cases (11.1%) the conclusion was impossible. These different situations denote the inadequacy of our resuscitation services in terms of human and also material resources to deal with serious complications of septic and hemodynamic shock [13] [14].

5. Conclusion

Mortality assessment remains a constant concern in daily medical policy. This study, although limited to a single department, serves to draw the medical team's attention to its shortcomings. There is a need to establish a medical audit system in hospitals whose mission will be to improve quality care delivery.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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