International Surgery Journal
Allode AS et al. Int Surg J. 2018 Feb;5(2):719-722
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20180381

Original Research Article

Epidemiological characteristics of deaths related to surgical emergencies in Sub-Saharan Africa: case of Parakou, Benin

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Received: 05 December 2017
Accepted: 28 December 2017

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ABSTRACT

Background: Emergency and resuscitation departments, often on the front lines of the hospital care system, are sadly the site of many deaths. Author aim to study the epidemiological characteristics of deaths related to surgical emergencies at Parakou Teaching Hospital in Benin.
Methods: This was a prospective, descriptive study covering 6 months from January 1st to June 31st 2016. It focused on patients admitted to the emergency department and hospitalized in general surgery or resuscitation department during the study period. Three criteria were defined: admission for a surgical emergency, clinical classification of emergency patients (known as CCMU: Classification Clinique des Malades aux Urgences) between 1 and 5 and evolution marked by death.
Results: A total of 54 deaths were recorded out of 379 surgical emergencies (14.2%). The sex-ratio was 2.2. The average age was 31±18.8 years old. The average admission time was 75.7±95.2 hours. The CCMU 4 and 5 were the most numerous (77. 7%). Traumatic emergencies were the most likely cause of death (56.6%), with cranio-encephalic trauma being the leading cause (38.9%). for non-traumatic emergencies (44.4%), acute generalized peritonitis is the leading cause of death (18.5%). The average time to surgical management was 87.4 hours, mainly related to the indigence of patients.
Conclusions: The reduction of deaths related to surgical emergencies requires the adapted equipment of the different services involved in the care, the continuous training of staff and the creation of a health insurance.

Keywords: Death, Problem, Parakou, Surgical emergencies

INTRODUCTION

Emergency and resuscitation departments, often on the front lines of the hospital care system, are sadly the site of many deaths. The question of death remains largely hidden in hospital departments because the staff feels it as a failure.[1] In France, 16% of patients who die in hospital die in emergencies.[1] In Africa and more specifically in Burkina Faso, 48.5% of deaths in the intensive care unit of the Ouagadougou Hospital Center are due to surgical emergencies[2]. Surgical emergencies therefore contribute significantly to intra-hospital mortality. In Benin, the Parakou Teaching Hospital is not on the sidelines of this situation, which motivates the present work to study the problematic of these deaths.

METHODS

This was a prospective, descriptive and analytical study performed in the teaching hospital of Parakou (Republic of Benin) over a period of 6 months, from January 1st to June 31st 2016. It focused on patients admitted to the emergency department and hospitalized in general surgery or resuscitation departments during the period study. Three criteria were defined: admission for a surgical emergency, clinical classification of emergency

patients (known as CCMU that means Classification Clinique des Malades aux Urgences) between 1 and 5 and evolution marked by death. Surgical emergencies represent conditions, which for the most part, failing a surgical intervention obtained without delay, cause the patients to succumb in a few hours or a few days.[3] Several scores exist and allow the evaluation of the patients taken care of in emergency department. Author preferred the CCMU because it has the advantage of being simple, easily remembered and quick to use.[4] Indeed it includes 7 degrees of severity: CCMU P (patient with a psychiatric pathology); CCMU 1 (patient considered stable); CCMU 2 (patient considered stable with a decision of complementary diagnostic or therapeutic act); CCMU 3 (patient whose condition is likely to worsen without being life-threatening); CCMU 4 (patient whose vital prognosis is engaged without need of imperative resuscitation maneuver); CCMU 5 (patient whose vital prognosis is engaged with imperative necessity of a resuscitation maneuver); CCMU D (deceased patient without any resuscitation maneuver). Incomplete medical records were excluded from the sample. The variables used were related to sociodemographic data (age, sex, level of instructions); diagnostic data (admission delay, CCMU, exams); surgical causes of death (traumatic and non-traumatic) and therapeutic data (time to medical treatment and surgical management). Data processing was performed using version 3.5.1 of Epi Info. The organization of data into tables and graphs was done with Excel 2013.

RESULTS

Epidemiological aspects

A total of 54 deaths were recorded out of 379 surgical emergencies taken care of during the study period so a frequency of 14.2%. These deaths occurred mainly in intensive care (51 cases, 94.4%) but also in the operating room (2 cases, 3.7%) and the emergency sector (1 case, 1.9%). They were 37 men and 17 women therefore a sex ratio equal to 2.2. All age groups were affected with a predominance of patients aged 20 to 40 years who accounted for 50%. The average age was 31±18.8 years old.

Diagnostic aspects

The average admission time was 75.7 hours with a significant variability of 95.2 hours as the minimum delay was 1 hour compared to a maximum delay of 504 hours (21 days). The distribution of patients according to the admission time (Table 1). The evaluation of patients according to the CCMU was as follows: CCMU 2 (1 case, 1.9%); CCMU 3 (11 cases, 20.4%); CCMU 4 (26 cases, 48.1%); CCMU 5 (16 cases, 29.6%).

The most commonly performed biological tests were blood group and Rhesus factor, haemoglobin, WBC and creatinine level. As for the morphological examinations, the abdominal X-ray was the most realized. Only 6 out of 21 patients were able to perform a CT scan (28.6%) and only 1 performed it within 24 hours.

Table 1: Distribution of deceased patients by admission time.

Time (hours)	No. of patient	Percentage
0, 24	23	42.6
24, 48	9	16.7
48, 72	3	5.5
>72	19	35.2
Total	54	100

Etiological aspects

Deaths were attributable to both traumatic emergencies (30 cases, 55.6%) and non-traumatic ones (24 cases, 44.4%) (Table 2). In the group of traumatic causes, the cranio-encephalic traumas come at the top of the list with 38.9% while in the opposite group, we find the generalized acute peritonitis (18.5%).

Table 2: Surgical causes of death.

	N	%
Traumatic causes		
Cranio-encephalic trauma	21	38,9
Polytrauma	6	11,1
Traumatic spinal injury	3	5,6
Non-traumatic causes		
Generalized acute peritonitis	10	18,5
Intestinal obstruction	5	9,3
Incarcerated hernia	3	5,6
Thermal injury	3	5,6
Fournier's gangrene	2	3,6
Gastric tumor	1	1,8
Total	54	100

Table 3: Distribution of patients by time of initiation of medical treatment.

Delay of initiation of medical treatment	CCMU 2	CCMU 3	CCMU 4	CCMU 5	Total
≤1 hr	1	7	15	11	34
1, 2 hr	0	1	6	3	10
2, 3 hr	0	3	4	1	8
3, 4 hr	0	0	0	1	1
>4 hr	0	0	1	0	1
Total	1	11	26	16	54

The medical treatment was initiated within a variable time (Table 3). Fourteen patients (25.2%) received surgical treatment with an average time of 87.4 hours (extremes of 3 hours and 15 days). The various reasons justifying this delay were among others: the indigence of patients (37.5%); the non-availability of examination

results particularly CT scan (25%); the lack of equipment (12.5%) and the absence of the surgeon or anesthetist (8.3%).

DISCUSSION

Epidemiological aspects

The frequency of deaths related to surgical emergencies was 14.2%. This rate is significantly higher than the 8.1% reported by Ngowe NM et al in Cameroon and 2.4% of Sall KB et al in Senegal.[5,6] Present patients were 31 years old on average with a predominance of the age group of 20 to 40 years. The same slice was found by Mbengono MJA et al but with a higher average age (42 years).[7] Male subjects were the most concerned with a sex ratio of 2.2, which is similar to the 1.7 reported in the study of Ngowe NM et al.[5] In short, it is the active and young men of our African people who pay the heavy price.

Diagnostic aspects

The majority of our patients (42.6%) were admitted within the first 24 hours. This was mainly victims of road accidents. In the city of Parakou, firefighters have a preponderant involvement in road accident by ensuring the transport of patients directly from the accident site to the hospital. The average admission time was 75.7 hours. Patients CCMU 4 and 5 were the most numerous (77.7%) which correlates with a high risk of death since the patient's prognosis was already compromised. Paraclinical examination were very limited in our series. Indeed, blood exams suffer from the lack of certain reagents and some exams are realized only during the day. Only 1 patient had been able to perform a CT scan within 24 hours compared to 40.6% in the study of Mbengono MJA et al.[7] It is therefore urgent to provide Parakou teaching hospital with a better equipped laboratory and a radiology department.

Etiological aspects

The surgical emergencies involved vary from one study to another, but all emphasize, as we do, a predominance of traumatic causes, with cranio-encephalic trauma at the top followed by polytrauma.[5,7] In addition according to Bahebeck's study, road accidents were responsible for the majority of deaths related to surgical emergencies (60%).[8]

On the other hand, with regard to non-traumatic causes, the rates differ. Indeed, while Ngowe NM et al join us with a predominance of acute generalized peritonitis at a rate of 20%, Mbengono MJA et al report a preponderance of thermal injuries.[5,7]

Therapeutic aspects

The time to initiation of medical treatment was not influenced by the severity of the disease in our context which is also mentioned by Sima A et al at the Libreville Hospital Center in Gabon.[5] There is therefore no internal policy to facilitate the management of surgical emergencies, hence the need for better hospital organization. There were even patients CCMU 5 who had received first aid beyond 1 hour whereas they should be resuscitated immediately. This is due to the lack of emergency kit.

The average time to surgical management was 87.4 hours in our series. Ngowe NM et al found a similar delay of 72.7 hours while Diango D et al reported a shorter time (3.5 hours).[5,10] Many reasons are evoked to justify this delay for surgery but there is a common point, the indigence of patients. This calls for the need for the establishment of social security or health insurance.

CONCLUSION

The reduction of deaths related to surgical emergencies requires the adapted equipment of the different services involved in the care, the training of staff and the creation of a health insurance.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Grange C, Héron A. Accompagnement de la fin de vie aux urgences. Revue internationale de soins palliatifs. 2012;27(3):85-90.
2. Ouedrago N, Niakera A, Somné A. Cahier d'étude et de recherche francophone/santé. 2002;4(12):375-82.
3. Mondor H. Les Diagnostics urgents: Abdomen. Paris, Masson; 1928:846.
4. Fourestie V, Roussignol E, Elkharrat D, Rauss A, Simon N. Classification clinique des malades des urgences: définition et reproductibilité. Réan. Urg. 1994;3:5738.
5. Ngowe NM, Mboudou E, Ngo-Nonga B, Tambo MF, Ze-Minkande J. La mortalité hospitalière des urgences chirurgicales de l'adulte à Yaoundé. Rev Afr Chir Spec. 2009;3(5):5-8.
6. Ka-Sall B, Kane O, Diouf E, Beye MD. Les urgences dans un centre hospitalier et universitaire, le point de vue de l'anesthésiste réanimateur. Med Trop. 2002;62:247-50.
7. Mbengono JA, Bengono RB, Nkodo JM, Essame TC, Amengle AL, Minkande JZ. Etiologies des décès dans les services d'urgences et de réanimation dans deux hôpitaux de la ville de Yaoundé. Health Sci Dis. 2015 Mar 28;16(1).
8. Bahebeck J, Ngowe NM, Binam F, Essomba A, Sosso AM. Bilan topographique des lésions traumatiques chez 300 accidentés observés à

l'Hôpital Général de Yaoundé. J Magh A Rea. 2000;8:246-48.
9. Sima A, Josseaume A, Ngaka ND, Galoisy GL, Carpentier JP. Surgical emergencies at Libreville hospital center. Annales françaises d'anesthésie et réanimation. 2003.
10. Diango D, Coulibaly Y, Keïta M, Diallo A, Koïta K, Diani N. Délais de prise en charge des urgences chirurgicales à l'Hôpital Gabriel Toure de Bamako. J Magh Rea. 2007;14(59):167-70.

Cite this article as: Allode AS, Hodonou AM, Tamou-Sambo B, Seto MD. Epidemiological characteristics of deaths related to surgical emergencies in Sub-Saharan Africa: case of Parakou, Benin. Int Surg J 2018;5:719-22.