

Mortality Observed in the General Surgery Department “A” at the University Hospital Center of Point “G” in Bamako

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Abstract

In Mali, few studies have concerned overall mortality in general surgery, but several specific studies have concerned the different affections. Reflection on the causes of death is an inherent part of the activity of any motivated surgical team. **Objective:** To analyze the rate and the main causes of mortality in the General “A” surgical department of the Point “G” CHU. **Patients Method:** Our study was retrospective, descriptive and covered a period of 5 years from 01/01/2014 to 12/31/2018. We collected 152 deaths for 2011 hospitalized patients. The data were collected from the files of these deaths on pre-established investigation forms. The deceased patients were classified as operative and non-operative death, death from non-cancerous and cancerous diseases, deaths occurring in emergencies and deaths in regulated surgery. **Results:** We recorded 152 cases of death for 2011 hospitalized patients, either an overall mortality rate of 7.55%. The average age of deaths was 44.20 years \pm 17.51 years with extremes ranging from 7 years to 85 years. The sex ratio was 1.62 in favor of men. The causes of death were represented by cancerous pathologies (69 deaths or 34.67%), non-cancerous pathologies (83 deaths or 4.58%). **Conclusion:** The mortality rate in general surgery remains high and is mainly linked to cancerous pathologies and the delay in taking care of patients.

Keywords

Mortality, General Surgery, Cancer, Non-Operated, Operated

1. Introduction

Reflection on the causes of death is an inherent part of the activity of any motivated surgical team [1]. The difficulties in establishing the causes of death are linked on the one hand to “poly pathology” and on the other hand to the difficulty of obtaining precise clinical data, to which must be added the incidents and accidents involving the patient care team, with a tendency to minimize or obscure them [2] [3]. Few studies have concerned overall mortality in general surgery, but several specific studies have concerned the different affections (peritonitis, appendicitis, hernias, digestive cancers, biliary and pancreatic pathologies, etc.). In Africa, hospital mortality studies are studies carried out in pediatric, gynecology-obstetrics, internal medicine and infectious diseases, but rarely in general surgery [4]. Screening campaigns for cancerous pathologies, delay in diagnosis, delay in taking charge of patients, insufficient budgetary resources allocated to health, poor distribution of personnel, especially specialized personnel, most of the specialists working in large cities, all these facts are factors which act negatively on the state of health of populations in general and on the state of health of patients hospitalized in a specialized environment in particular. We considered it necessary to take stock of mortality in the general surgery departments. This retrospective study makes it possible to evaluate the activity of the service by grouping together the probable causes of death, because to date the dissection of deceased patients is not required in our hospitals.

2. The Objectives of Our Study

2.1. General Objective

The general objective of this study is to identify the different causes of mortality in our service.

2.2. Specific Objectives

Highlight the overall death rate during the study, assess the real rate of deaths linked to surgical interventions, assess the frequency of cancer-related deaths, assess the frequency of deaths linked to patients undergoing emergency and cold surgery, study for each of the ailments in question the various factors linked to the patients, their disease and the medico-surgical environment. In light of the problems posed by deaths in a surgical department in Mali, determine the share that goes directly to the surgical act.

3. Patients and Method

This was a retrospective, descriptive, analytical study and focused on deaths that occurred in the “A” surgical department of the Point “G” university hospital in Bamako. The classification in operative and non-operative death, in death from non-cancerous and cancerous conditions, in emergency and cold deaths was intended to determine the causes of death. This study covered 5 years of service activity from 01/01/2014 to 12/31/2018. We collected 152 deaths for 2011 hospi-

talized patients. The “A” surgical department of the Point “G” CHU included two pavilions with 42 beds in total.

3.1. Data Collection

The collection of data in the medical files was done in ascending chronological order from 01/01/2014 to 12/31/2018, from hospitalization registers, medical files, and the HOSIX computer system. All the data has been established on an exploitation sheet. A complete file included a medical observation mentioning the demographic data, the a etiological circumstances, the clinical presentations, the results of the paraclinical examinations carried out, the surgical therapeutic attitude and the postoperative evolution on the date of the last follow-up. The study parameters were etiological, clinical, paraclinical, surgical therapy and short- and medium-term postoperative progression.

3.2. Statistic Study

For the statistical study, we plotted all the data on an Excel table and we used the SPSS 17.0 software. The qualitative variables of our study were expressed in percentage and in number, while the quantitative variables in means \pm standard deviations. The results are reported in the form of graphs and commented tables.

3.3. Inclusion Criteria

All cases of operated or non-operated death occurring in our department, cases of abscesses operated on under general anesthesia were considered as not operated.

3.4. Non-Inclusion Criteria

Cases of death registered in another service even if the patient is operated on by our team, patients who left against medical advice.

4. Results

The crude death rate of operated and non-operated patients was 152 deaths, or 7.55% of cases. During the study period 2011 patients were hospitalized, among them around 1800 patients (90% of cases) were operated on and 211 patients (10% of cases) were not operated (**Table 1**). 63/152 or 41.44% of the deaths were operative and 89/152 or 58.56% of the deaths were non-operative. We recorded about 30 deaths per year, men were the most represented (94 deaths or 61.84% of cases) with a sex ratio of 1.62 in favor of men. The average age of deaths was 44.20 years \pm 17.51 years with extremes ranging from 7 to 85 years (**Table 2**). About 71% of the deaths occurred outside of working hours.

521 patients were admitted in emergency with 70 deaths or a rate of 13.43% of cases. Among them 84 non-operated patients including 37 deaths, either an emergency non-operative death rate of 44.04%. 437 were operated on urgently with 33 deaths, either a mortality of 7.55% of cases. Of the 1490 cold admitted

Table 1. Percentage of hospitalizations and patients operated on and not operated on by year.

Year	Total hospitalized patients	Number of operated patients	Number of non-operated patients
2014	393	339 (85.5%)	57 (15.5%)
2015	314	295 (93.95%)	19 (6.5%)
2016	423	369 (87.23%)	54 (12.77%)
2017	434	379 (87.33%)	55 (12.67%)
2018	447	421 (94.18%)	26 (5.82%)
Total	2011	1800 (89.50%)	211 (10.50%)

Table 2. Distribution of deaths by age group.

Age group	Number of deaths	Percentage
Under 20	8	5.26
20 - 39 years	43	28.28
40 - 59 years	59	38.81
60 - 79 years	40	26.31
80 years and over	2	1.31
Total	152	100

patients, we deplored 82 cases of death, either a mortality of 5.50%, among them 127 non-operated patients with 52 deaths or an operative mortality of 40.94% and 1363 patients operated on with 30 deaths or a cold operative mortality of 2.20%.

1812 patients were hospitalized for non-cancerous conditions in which we recorded 83 deaths or 4.58% of cases. Among them 49/153 non-operative deaths, either 32.02% of cases or 1659 patients having been operated on, we recorded 34 deaths, either a mortality rate of 2.05% of cases. The non-cancerous and unoperated conditions (**Table 3**) causing the deaths were: occlusive syndrome (small intestine, colon) 13 cases or 26.53% of cases; thermal burns greater than 30% of body surface 5 cases, either 10.20%; arteriopathy obliterating of the lower limbs 4 cases or 8.16%; abscesses and bedsores 6 cases or 12.25%. The specific death rates of non-cancerous patients operated (**Table 4**) on were: peritonitis (68 cases, 7 deaths, either a mortality rate of 10.29%); intestinal obstructions (87 cases including 14 deaths, or 16.09% mortality rate); penetrating wounds of the abdomen and/or thorax (21 cases, 2 deaths, either a mortality rate of 9.52%); uterine fibroids (89 cases, 1 death or 1.12%); the other causes of death were: lung cyst (1 case); mesentery infarction (1 case); pericarditis (1 case); postoperative eventration (1 case); and a case of hernia having lost the right to cite.

We hospitalized 199 cancer patients, 69 of whom died, for a mortality rate of 34.67%. Among them 58 unoperated patients including 40 deaths (**Table 5**), a mortality rate of 68.96%; 141 patients operated on, 29 of whom died, for a mortality rate of 20.57% (**Table 6**). Among the cancers operated on, we had 67 cases

Table 3. Conditions causing non-cancerous and unoperated deaths.

Conditions	Number of deaths	Percentage
Chronic infectious lung disease	7	14.29
Occlusive syndrome (small intestine-colon)	13	26.53
Post abortal pelvi-peritonitis	2	4.08
Thermal burn > 30%	5	10.20
Polytrauma	2	4.08
Gangrene	4	8.16
Abscesses and bedsores	6	12.25
Snake bite	1	2.04
Pyloric stenosis	2	4.08
Gastrointestinal bleeding	1	2.04
Causes not determined	6	12.25
Total	49	100

Table 4. Death rate of non-cancerous patients operated.

Affections	Number of patients operated	Number of deceased patients	Percentage
Digestive surgery (appendicitis excluded)	301	25	8.30
Gynecological surgery	346	1	0.29
Urologic surgery	98	2	2.04
Thoracic surgery	72	4	5.55
Other surgeries	847	2	0.23
Total	1659	34	2.04

Amputation, thyroidectomy, varicose veins, appendectomy, wall surgery.

Table 5. Deaths of unoperated cancer patients.

Cancers	Effectif	Percentage
Digestive	29	72.50
Bladder	4	10
Uterus	4	10
Breast	3	7.50
Total	40	100

Table 6. Deaths of cancer patients operated.

Cancers	Number of operated patients	Death	
		Number of patients	Percentage
Digestive	102	23	22.55
Gynecological	26	3	11.54

Continued

Urological	6	2	33.33
Pulmonary	2	0	0
Other	5	1	20
Total	141	29	20.56

of stomach cancer with 16 deaths, or 23.88%; colon cancers (5/20 deaths or 25% of cases); mesentery cancers (8 cases operated on and with death); cancer of the esophagus (5 operated cases, 3 deaths or 60%); uterine cancer (13 cases, 2 deaths, or 15.98%); breast cancer (3 cases, one of which died, either 7.69%); thyroid cancer (3 cases including one death, either 33.33%); bladder cancer (4 cases including one death).

The death rate observed by group of disease was 99/493 digestive disorders or 20.08% of cases, 11/374 gynecological disorders or 2.94% of cases, 7/109 urological disorders or 6.42% of cases, 9/107 thoracic affections or 8.41% of cases. Note that simple appendicitis did not record any death.

5. Discussion

Our study was a retrospective, descriptive, analytical and focused on the deaths which occurred in the surgical department “A” of the university hospital of Point “G” of Bamako, during a period of 5 years from 01/01/2014 to 31/12/2018.

The mean age of the deceased patients was 44.20 ± 17.51 years. The extremes were from 7 years to 85 years, 40% of the deaths are between 40 and 59 years. The sex ration of 1.62 was in favor of men. TAKONGMO S [5] in Cameroon had found 208 cases of death occurring in subjects aged 8 to 85 years, of which 129 were men or 62% and 79 women or 38%. Proye in France [1] in 1990 found an average age of deceased patients of 63.7 years with extremes of 39 to 95 years; 34.5% were ≥ 70 years old. The death curve by year and by sex found about 30 deaths per year and a sex ratio of 1.62 in favor of men.

On 2011 hospitalized patients, we recorded 1800 surgical interventions, *i.e.* a frequency of 89.50%. 211 hospitalized patients did not undergo surgery or 10.50%. We collected 152 deaths, for an overall mortality rate of 7.55%. Among the 1800 patients operated on, 63 patients died, *i.e.* 3.5% mortality. We recorded 33 emergency operative deaths, the occlusions represented 16 cases (48.48%); peritonitis 7 cases (21.21%); traumatic wounds 2 cases (6.06%); occlusions in cancer 5 cases (15.15%); 1 case of perforation in stomach cancer; 1 case of mesentery infarction and 1 purulent pericarditis. The particularity of emergency interventions has been highlighted in several studies [1] [5]. According to CORIAT [6] when the intervention is carried out in emergency, the general repercussion of the digestive affection which imposes the surgery, the ignorance of certain defects presented by the operated, the possibility of regurgitation, even the inhalation of gastric liquid in patients operated on who are not fasting or who are in digestive obstruction, represent as many additional risk factors. We

deplored 89 deaths for 211 unoperated patients. It should be noted that among the cases of non-operative death, there were 49 cases of death from non-cancerous conditions, including 13 cases of occlusion; 2 cases of pyloric stenosis; 2 cases for trauma; 2 cases of pelviperitonitis; 5 cases of thermal burns; 1 case of snake bite; 4 cases of arterial disease obliterating the lower limbs; 1 case of hemorrhagic diarrhea; in 6 cases we were unable to justify the cause of death. 40 cases of death from cancerous diseases among which: 16 cases died from cancer; in 24 cases of death the diagnosis of cancer exceeded for surgery was made. Among the cancerous patients not operated (58 cases) we had recorded 40 deaths, 16/40 deaths for cancer, either 40% had undergone a previous surgical intervention. These 16 cases were re-hospitalized in the terminal phase of their cancer. 24/40 cancer deaths or 60% have never been operated on. Different authors have insisted on “surgical abstentions” without alluding to “non-operative mortality” in their department [2] [3] [7]. Postoperative mortality from cancerous diseases was 29 cases of death out of 141 patients, either 20.56%. Among these deaths, 24 concerned digestive surgery (16/67 stomach cancers, 5/20 colonic cancers and 3/5 esophageal cancers) and 5 deaths concerned other cancers operated on (2/13 deaths), cancer of the uterus (1/13 death), breast cancer (1/3 death), bladder cancer (1/3 death). Our relatively high postoperative mortality rate was mainly due to the late diagnosis of these tumors admitted to the department. Outdated cancers diagnosed at the first surgical consultation are rare in Europe because of the early detection of cancers [8] [9]. Screening as organized in Japan has treated superficial stage cancers in more than 35% of cases [10]. In Mali, the delay in diagnosis by the insufficiency of medico-sanitary infrastructure, the cult maintained of the effectiveness of traditional medicine, mean that we receive tumors at outdated stages for surgery although in the service we try the maximum palliative actions whenever there is a possibility of relieving the patient.

6. Conclusion

We estimated necessary to do the point on mortality in a general surgery department. This descriptive and retrospective study made it possible to assess the activity of the service by grouping together the probable causes of death, because to date the dissection of deceased patients is not required in our hospitals. The late recourse to medical care, the lack of systematic cancer screening, insufficient technical facilities, the financial problems of patients, have contributed to the rise in the rate of hospital deaths in the department. This high mortality rate can be lowered by acting on three parameters: by lowering the emergency mortality rate; by creating an oncology service; by strengthening the surgical, anesthesia and resuscitation teams.

Limitations of the Study

It was a retrospective study. The main difficulty was incomplete files due to the lack of an archiving service. We have lost sight of many of our patients. None of

our bodies have undergone an autopsy for lack of a forensic pathologist.

Conflicts of Interest

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

References

- [1] Proye, C., Martinot, I.C., Triboulet, J.P., Varnaille, B., Sautier, M., Dromer, D. and Camp, D. (1991) Mortalité d'un service de chirurgie générale de CHU. *Journal de Chirurgie (Paris)*, **11**, 453-458.
- [2] James, G., Patton, R.E. and Heslin, A.S. (1955) Accuracy of Cause-of-Death Statements on Death Certificates. *Public Health Reports*, **70**, 39-59.
- [3] Justin Besanson, L., Delavie, R.P. and Chretien, J.L. (1963) Recherche des causes de mortalité à l'aide de 1000 confrontations anatomo-cliniques. *Bulletin de la Société de Médecine de Paris*, **114**, 815-824.
- [4] Dékou, A., Ouergnin, G.A., Konan, P.G., Kouamé, B., Fofana, A., Kramo, N., Konin, A., Manzan, K. and Djédjé, M.A. (2009) Contribution à l'étude de la mortalité dans un service d'urologie: Le cas du service d'urologie du CHU de Cocody d'Abidjan de 2000 à 2006. *African Journal of Urology*, **15**, 44-52.
<https://doi.org/10.1007/s12301-009-0009-4>
- [5] Takongmo, S., Angwafof, F., Binam, F., Afane Ela, A., Fonkou, A., Gaggini, J., Le Saint, B., Lantum, D. and Malonga, E. (1993) Mortalité hospitalière en milieu chirurgical: nécessité de l'audit médical. *Médecine d'Afrique Noire*, **40**, No. 12.
- [6] Coriat, P., Collard, D., Villet, R. and Mourot, J. (2012) Evaluation du risque opératoire en chirurgie digestive. EMC, (Paris), Techniques chirurgicales Appareil digestif, 40010, 4-8-12.
- [7] Hollender, L.F., Kauffmann, J.P. and Bur, F. (1983) Etude rétrospective de 384 exérèses pour cancers gastriques. *Journal de Chirurgie*, **109**, 731-741.
- [8] Sirgon, R., Canzoniri, V., Cannizao, R. and Pasquoti, B. (1998) Early Gastric Cancer: Diagnostic Surgical. Treatment and Follow-Up of 45 Cases. *Tumori*, **84**, 547-551.
<https://doi.org/10.1177/030089169808400507>
- [9] De Manzoni, G., Di Leo, A., Borzellino, G., Pedrzzani, C., Tasseli, S., Castelli, A., Zerman, G. and Fersini, A. (2001) Envahissement des ganglions para-aortiques dans les adénocarcinomes de l'estomac. *Annales de Chirurgie*, **126**, 302-307.
[https://doi.org/10.1016/S0003-3944\(01\)00521-1](https://doi.org/10.1016/S0003-3944(01)00521-1)
- [10] Segol, P.H., Vermaerde, J.C., Fournier, J.L., Chomon-Towski, J. and Salame, E. (1994) Cancer de l'estomac notions fondamentales et diagnostics. Edition tech, EMC, 9-027 A10, 18 p.