

The Reasons for Admission of Elderly Subjects in Intensive Care at the CHU Ignace Deen

Abdoulaye Touré^{1*}, Amadou Yalla Camara², Almamy Bangoura¹, Donamou Joseph³, M'mah Lamine Camara³

¹Anesthesia-Resuscitation Service. University Hospital of Ignace Deen of Conakry

²Medical and Surgical Emergency Department. Donka University Hospital

³Anesthesia-Resuscitation Service. Donka University Hospital

Email: *atfmamad@yahoo.fr

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Abstract

Objective: To determine the reasons for admission of elderly subjects and the prognosis in general intensive care. **Patients and Methods:** Observational descriptive and analytical study with prospective collection of data over a period of one year from January 1 to December 31, 2021. Patients aged 65 or over were included. **Abstract:** During the study period, 223 cases were collected out of 587 patients admitted, giving a prevalence of 37.9%. The average age was $74.127.39 \pm$ years with extremes of 65 and 96 years and a male predominance (58.7%). The comorbidities were dominated by arterial hypertension (71.3%). The patients were: transferred from medical and surgical emergencies (75.8%). The average admission time was 48.8 ± 29.8 hours. One hundred and eight patients had a Glasgow score between 3 and 7. The reasons for admission were dominated by vascular causes (51.6%). Strokes of any type accounted for 43.9% of these reasons for admission. The average time for carrying out the biological assessments and imaging was 41.8 ± 27.3 hours with the extremes of 3 and 89 hours, 37.2% had a complete assessment within 24 hours. The average duration of hospitalization was 7.10 ± 8.87 days with extremes of 1 and 72 days. The mortality rate was 71.7%. **Conclusion:** This study has made it possible to take stock of the reasons for the admission of elderly subjects to intensive care. It appears that vascular causes are the main reasons for admission with heavy comorbidities which results in high mortality.

Keywords

Reasons for Admission, Elderly Subject, Resuscitation

1. Introduction

Resuscitation activity is defined by the management of patients of any age presenting or likely to present one or more acute failures involving the vital prognosis and requiring both the use of specific techniques, expensive materials and the continuous presence of competent and qualified medical and paramedical personnel [1]. ICU admission decisions are most often made in emergency situations and represent a significant burden for society, financial considerations also intervene in the decision [2]. The definitions differ from every point of view of the term elderly person, between the chronological age and the biological, socioeconomic criteria vary from one country to another. According to the WHO in 2014, designates the elderly subject to an age greater than or equal to 65 years [3]. The physiological changes induced by age tend to weaken the elderly subject and increase the level of care consumption. Due to this fact, the increase in the life expectancy of the population explains the more and more frequent part of the care of the elderly by intensive care units [4]. According to the French Language Resuscitation Society in 2012, in the United States 50% of patients admitted to intensive care are over 65 years old, while in France, patients over 80 years old represented more than 10% of the recruitment of intensive care services. resuscitation [5]. The demographic evolution and the improvement of life expectancy lead us to admit more and more elderly people in intensive care. In the interest of a better knowledge of the management of the affections of the elderly, we planned to carry out this study in the general intensive care unit of the CHU Ignace-Deen and our objective was to determine the reasons for the admission of elderly subjects and prognosis in multipurpose intensive care unit at CHU Ignace-Deen.

2. Patients and Methods

We carried out an observational study with a descriptive and analytical aim with prospective collection of data over a period of one year from January 1 to December 31, 2021. The study was carried out in the general anesthesia-resuscitation department of the Hospital Center University (CHU) Ignace Deen. It is a level 3 CHU. It has a capacity of 450 beds and the anesthesia-resuscitation department has a capacity of 10 beds and has two anesthesiologists-resuscitators and two general practitioners. The service receives about 600 patients per year. Patients aged 65 or over admitted to the department during this period were included in the study regardless of the pathology. Patients less than 65 years old were excluded. For each admission, we collected data on a standardized form. We analyzed the following parameters: epidemiological of the patient (age, sex, profession, origin), and comorbidities (hypertension, diabetes, recurrence of stroke). The mode of transport to the emergency room and or intensive care unit, the reasons for admission, the clinical data, the admission time, the paraclinical data were distributed as follows: complete assessment (was considered as complete assessment: blood count, urea, creatinine, blood ionogram, glycemia, prothrom-

bin level, activated partial thromboplastin time, transaminases, cholesterol and fraction, medical imaging (brain scan, electrocardiogram), incomplete when four elements of the complete assessment are missing and without assessment when the assessment has not been carried out, the deadline for carrying out the assessments, the therapeutics, evolutionary and prognostics were taken into account. The data were collected under anonymity and confidentiality was respected. The data collected was entered, processed and then analyzed using the SPSS version 22 software.

3. Results

3.1. Epidemiology

During the study period, 223 cases were collected out of 587 patients admitted to intensive care, i.e. a prevalence of 37.9%. The average age was 74.12 ± 7.39 years with extremes of 65 and 96 years. A male predominance was noted (58.7%), the sex ratio was 1.4 (M/F). **Table 1** describes the socio-professional strata of the patients included. The comorbidities were dominated by arterial hypertension (HTA) 71.3%, hypertension associated with diabetes 56%, diabetes 45.7%,

Table 1. Epidemiological characteristics of patients.

	<i>Effective</i>	<i>Percentage</i>
Age		
65 - 69	66	29.6
70 - 79	103	46.2
80 - 89	42	18.8
>90	12	5.4
Total	223	100
Sex		
Male	131	58.74
Feminine	92	41.26
Occupation		
Household	65	29.15
Trader	28	12.6
Official	59	26.45
Retirement	39	17.5
Worker	2	0.9
Unemployed	13	5.8
Farmer	17	7.6
Origin		
Urban	155	69.5
rural	68	30.5

ischemic heart disease at 43%, recurrence of ischemic stroke at 39%, heart failure at 35.9% and renal failure at 30.9%.

3.2. Clinical Data

In our study, 75.8% of patients came from medical and surgical emergencies, 15.2% had been transferred from another department of the hospital and 8.9% had been referred from other health structures. Only 4.5% of our patients benefited from medical transport for admission to the emergency room and 1.8% for resuscitation. The private vehicle had been used to transport the other cases. The average time to intensive care admission was 48.8 ± 29.8 hours with extremes of 3 and 98 hours. On admission, more than half of the patients (82.9%) had arterial hypertension greater than or equal to 160/90 mm Hg, an average blood sugar level was 1.3 ± 0.6 g/l with the extremes of 0.34 ± 4.4 g/l, peripheral oxygen desaturation (SpO_2) was less than 90% in ambient air in 133 patients, ie 59.6%. The clinical picture on admission was mainly dominated by coma in 156 patients (69.5%) and the average Glasgow score was 8 ± 3.4 with extremes 3 and 15; 48.4% of patients had a Glasgow score between 3 and 7, ninety had a Glasgow score between 8 and 12 in 40.4%. Clinical anemia was present in 105 patients (47.1%), anuria in 35 patients (15.7%), and seizure in 13 patients (5.8%). **Table 2** shows the reason for the admission of patients in intensive care.

3.3. Paraclinical Data

A complete paraclinical assessment was carried out by 83 patients (37.2%) in less than 24 hours, the assessment was incomplete in 97 patients (43.5%) and 43 patients (19.3%) did not perform assessments. The average completion of the assessments was 41.8 ± 27.3 hours with extremes of 3 and 89 hours.

3.4. Therapeutic Data

All patients benefited from care and including conditioning which was carried out in all patients by nursing care on admission, peripheral venous access, urinary catheterization. Eighty-four patients (42.2%) had benefited from central line placement. The treatment of the various vital distresses was taken care of according to the case. Vascular filling was provided by crystalloids in all patients. Blood transfusion with packed red blood cells was required in 125 patients (56.1%) taking into account blood grouping. Bi-antibiotic therapy was initiated in all patients by parenteral route based on third-generation cephalosporin (C3G) and imidazole in more than half of the patients; oriented secondarily according to the blood culture and the antibiogram. Enteral feeding was instituted systematically in all patients; 56 patients (25.1%) received parenteral feeding associated with trace elements. Oxygen therapy was used systematically in 188 patients (84.3%), and 35 patients (15.7%) had been put on respiratory assistance. Only the reasons for admission for traumatic reasons had benefited from respiratory assistance 13%. Neurosurgery was required in 15 patients, i.e. 6.7% on

admission, and involved 13 cases of chronic subdural hematoma and 2 cases of extradural hematoma.

3.5. Evolutionary and Prognostic Data

The average length of stay was 7.10 ± 8.8 days with extremes of 1 and 71 days. The complications that occurred were dominated by aspiration pneumopathy (42.6%) followed by bedsores (39.9%), urinary tract infection (5.4%) and 1.3% accidental extubation. We recorded 160 cases of death, representing a mortality rate of 71.7%; 24.2% were cured and 4% of patients were transferred to another department.

4. Discussion

Our study took place in a hospital center with a more or less high volume of intensive care admission activity. Our sample was representative of the population of elderly subjects admitted to general intensive care. The main limitation of this study is its monocentric character. The objective of this study was to identify the reasons for the admission of elderly subjects in intensive care and the prognosis. The prevalence of elderly admissions in our study was 37.9%. In the literature, the prevalence of admissions of elderly subjects to intensive care varies from one study to another. A study by Bagshaw *et al.* from an Australian and New Zealand database gathered 183 resuscitations [6]. The authors noted an increase of 6% per year in the admission of subjects aged over 80 between 2001 and 2005 to reach 16% of admissions in 2005 [6]. Although of lesser amplitude, an increase in the proportion of subjects aged over 80 admitted to intensive care has been reported in other countries [7] [8]. This observation has been made by several authors, in particular by Sjoding *et al.* in the United States, and Ihra *et al.* in Austria [9] [10]. Conversely, other authors had shown a significant reduction in intensive care admissions for the over 80s was reported in Scotland (10.0% in 2005 vs. 8.4% in 2009) as well as in a Canadian province with nevertheless large variations between healthcare establishments [10] [11]. In our study, 75.8% of patients came from medical and surgical emergencies, 15.2% had been transferred from another department of the hospital and 8.9% had been referred from other health facilities. The Guidet *et al.* study [2], on the admission to intensive care of the elderly from the emergency department, showed that the elderly were admitted to the intensive care unit for medical reasons, and almost half of them they emergency services. In another French multicenter prospective study over one year (ICE-CUB) including 2646 patients aged over 80 and presenting to the emergency room for a potential reason for admission to intensive care, 1 patient out of 4 was proposed by the emergency physicians to the intensive care unit and only half, *i.e.* 1 patient out of 8, was admitted to intensive care [12]. The probability of a very old person being admitted to intensive care varied considerably (from 5% to 38%) from one hospital to another [12]. These results confirm that emergency departments remain the main entry point for all patients. The com-

orbidities in our study were dominated by arterial hypertension or hypertension associated with diabetes and/or ischemic heart disease. This upsurge in cardiovascular pathologies and metabolic pathologies could be explained by the occurrence of cerebrovascular accidents, which represents the first cause of the reasons for admission of elderly subjects to intensive care, *i.e.* 43.9% on the one hand, and on the other hand, these are pathologies known in developed countries and which are increasingly found in developing countries, which remains a public health problem. Elderly subjects were victims of traumatic pathologies in 29 cases (13%). The socio-professional upheavals due to urbanization and the increase in traffic and two-wheeled vehicles could explain these traumatic pathologies.

The average admission time in our study was 48.8 to ± 29.8 hours with extremes of 3 and 98 hours. Complex old guidelines have existed for a long time on decision-making leading to the admission or refusal of a patient. These recommendations, emanating in particular from the Society of Critical Care Medicine, are based on a definition of potential beneficiary patients, established gradually over time [13]. These are priority recommendations for admission and not for non-admission. These recommendations require the evaluation of the expected benefit and the probability of success of the treatment, the benefit of resuscitation in relation to the initial disease, the probable future quality of life, and the patient's wishes, these are all complex concepts and evaluations which, if they can be justified by experience and literature, remain an eternal restart, especially since the reflection is carried out in an emergency context. But in our context, this relatively long admission time could be explained by the refusal of parents or relatives who think that admission to intensive care is a death sentence. Several authors [14] [15] [16] have shown that beyond medical criteria, it appears that few patients or their relatives are involved in the decision to be admitted to intensive care. In a study carried out in Switzerland by Escher *et al.* [17], the doctors evaluated the factors intervening in the decision of admission of the patients in intensive care, the classification obtained by descending order of importance was the following: the underlying disease; the prognosis of the acute disease; patient choice; bed availability; the nursing load; the department's admissions policy; possible medico-legal consequences; the patient's functional status; the wish of the family; the age of the patient; the cost of care; compliance by the patient with medical recommendations.

The clinical picture on admission was mainly dominated by altered consciousness in more than half of the patients with an average Glasgow score of $83.4 \pm$ with extremes of 3 and 15. One hundred and eight patients had a score of Glasgow between 3 and 7 therefore in a coma. This is due to the fact that a coma is the general manifestation of an untreated disease or a delay in access to appropriate health facilities. Several authors have made this observation. [18] [19].

The reasons for admission are in **Table 2**, they are dominated by vascular causes with 98 cases (43.9%) of all the reasons for admission. Among these, cerebral vascular accidents of all types occupy the first place, with a frequency of 35.9%.

Table 2. Distribution of patients according to reasons for admission.

<i>Reasons for admission</i>	<i>Number (N = 223)</i>	<i>Percentage</i>
<i>Vascular causes</i>	115	51.56
Ischemic Stroke	54	46.95
stroke malignant infarction	13	11.30
Hemorrhagic Stroke	31	26.95
Brain tumor	7	6.08
Cardiogenic shock	5	4.34
Alzheimer's	3	2.61
PAD*	2	1.74
<i>Metabolic causes</i>	43	19.28
Ketoacidosis coma	15	34.88
hypoglycemic coma	6	13.95
Hyperosmolar coma	2	4.65
Dehydration and undernutrition	9	20.93
Uremic coma	2	4.65
Chronic renal failure	5	11.62
Hepatic encephalopathy	3	6.97
Hepatic cirrhosis	1	2.32
<i>Sepsis</i>	21	9.41
Septic shock	9	42.85
COPD**	3	14.29
Meningoencephalitis	6	28.57
Cerebral toxoplasmosis	3	14.29
<i>Traumatic causes</i>	29	13.00
Chronic subdural hematoma	13	44.82
Extradural hematoma	2	6.89
Hemorrhagic bruise	3	10.34
Polytrauma	5	17.24
Femoral neck fracture	6	20.69
Postoperative follow-up	15	6.73
Colon tumor	5	33.33
gastric tumor	3	20.00
Prostate cancer metastasis	5	33.33
Breast cancer with metastasis	2	13.33

PAD*: Obliterating arteriopathy of the lower limbs. COPD**: Chronic obstructive pulmonary disease.

The time taken to carry out the paraclinical assessments was 42.8 to ± 27.3 hours with extremes of 3 and 89 hours. A paraclinical assessment was completed

within 24 hours in 83 patients (37.2%), incomplete in 97 patients (43.5%) and 19.3% one of completion greater than 72 hours. This could be explained by the lack of social coverage for medical care which would also be an obstacle for the care of elderly subjects without income or retired on the one hand, on the other hand, the elderly Africans lived in rural communities; today, more and more victims of socio-professional upheavals (urbanization, retirement), the elderly live in urban areas more than 69.5%. They rarely benefit from medical follow-up with a health check-up, and consult the emergency room only when their general condition deteriorates, and consciousness disorders are severe.

The average length of stay was 7.10 ± 8.8 days with extremes of 1 and 71 days. This relatively long stay of elderly subjects in intensive care could be linked mainly to heavy comorbidities with chronic terminal organ failure without possible curative treatment with the consequence if they are taken care of in intensive care, a risk of permanent dependence on substitution techniques.

The mortality rate recorded in our study was 71.7%, comparable to the 70% reported by Mahoungou *et al.* at the Brazzaville University Hospital [20]. This high mortality rate in our context could be explained by: the delay in admission to intensive care, the long delay in carrying out the biological assessment and medical imaging (brain scan) this delay in carrying out these examinations which are essential for research of etiology compromises the management and consequently the prognosis on the one hand, on the other hand, the high frequency of coma more than half (48.4%) on admission with a Glasgow score of between 3 and 7, the majority of whom were not on ventilator assistance, advanced age associated with multisystemic comorbidities could also explain this mortality.

5. Conclusion

This study has made it possible to take stock of the reasons for admission of the elderly subject to intensive care. This study made it possible to show a high frequency of admission of elderly subjects in intensive care with heavy comorbidities sometimes associated with chronic organ failure, without social security coverage for medical care which delays treatment, resulting in excess mortality. The implementation of objective admission criteria and universal health insurance coverage would improve and reduce this mortality.

Conflicts of Interest

No conflicts of interest on the part of the authors to report.

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