

PREDICTIVE FACTORS FOR A PROLONGED STAY IN THE SURGICAL INTENSIVE CARE UNIT

Abstract :

The intensive care unit is usually identified as a place where acute care is provided over a short period of time. But sometimes this short hospitalisation can turn into a long stay.

Through a retrospective study, we attempted to identify this group of patients whose stay was prolonged in the surgical intensive care unit of Casablanca University Hospital over a 3-year period (December 2015-January 2017), including all patients aged 18 or over. Various parameters were collected and compared between the group with a length of stay >10 days. 184 patients were admitted during this period with an average age of 49.2 years and a sex ratio of 1.24. Planned surgery was the most frequent reason for admission (48%) and the mean APACHE II score was 20.79.

In bivariate analysis, the length of stay was influenced by the neurosurgical nature of the admissions, which resulted in a prolonged stay in intensive care, age, the diagnosis of admission as traumatic and the APACH score. On the other hand, gender and use of ventilation had little influence on prolonged ICU stay. The impact of prolonged stay was very remarkable in terms of the occurrence of nosocomial infections, haemorrhagic complications and trophic disorders, but there was no difference in mortality. The incidence of prolonged stay remains relatively high in our study, and this has a significant economic impact. Much remains to be done to reduce the length of stay, in particular by setting up weaning or post-resuscitation units, especially for neurosurgical patients.

Key words: Long stay, Intensive care unit, Predictive factors

Introduction

The intensive care unit (ICU) is often perceived as a place of acute care where the patient's vital prognosis, substitution techniques and the anguish of families are intertwined. A prolonged stay in intensive care is generally viewed negatively by doctors, as it raises numerous questions about management, functional prognosis and the legitimacy of continuing intensive care.

Our study is a longitudinal, epidemiological and analytical retrospective analysis of prolonged stays in the surgical intensive care unit (ward 17) of the Ibn Rochd University Hospital in Casablanca over three years. The aim was to gain a better understanding of these patients and their outcome, in order to identify this specific group and improve their care.

Patients and methods

A retrospective analytical study was conducted in Pavilion 17 of the anaesthesia and surgical intensive care department of the Ibn Rochd University Hospital in Casablanca over three years, from January 2015 to December 2017. It included 184 patients who stayed ≥ 10 days, aged ≥ 18 years. Data were collected from admission registers and medical records, then analysed to assess factors influencing prolonged length of stay, using statistical tests such as

Student's T-test for quantitative variables and Fisher's test or chi-square test for qualitative variables.

Results

From January 2015 to 2017, 2291 patients were admitted to the Surgical Intensive Care Unit (Pavilion 17) at CHU Ibn Rochd in Casablanca. Of these, 184 had an extended stay, representing an incidence of 8.03% of all admissions. The average age of the patients was 49.2 years, with a notable distribution in the 41-60 age group. They were predominantly male (55%). The main comorbidities were diabetes (30%) and arterial hypertension (26%).

The majority of patients were admitted via the emergency department (27%), mainly for scheduled (48%) and emergency (19%) surgical conditions. On admission, 40% of patients had a Glasgow score between 13 and 15, and most were afebrile (89%). Around 83% had a normal respiratory rate, while 91% had an oxygen saturation of >95%.

Regarding haemodynamic constants, 86% had a normal heart rate, but 24% had a mean arterial pressure < 70 mm Hg.

Of the 184 patients, 80% required mechanical ventilation. The main reasons for admission were neurological distress (35%) and post-operative management (29%).

109 patients died during their stay, mainly due to infectious complications (58%) and haemorrhage (17%). The mean Apache II score was 20.79, with significant variation in scores over the years studied. The average length of stay was 20.59 days, with a range from 10 to 119 days.

Factors associated with a prolonged stay included age, certain medical histories such as chronic renal failure, and specific reasons for admission such as neurosurgical pathologies.

Discussion:

Prolonged stay appears to have major economic as well as physical repercussions.

We observed very high rates of nosocomial infections and thrombotic and thromboembolic disorders in patients with prolonged stays.

The length of stay in intensive care is an important tool in the development of the quality of care and activity in an intensive care unit. For the practitioner, ensuring optimal patient care on a daily basis with the shortest possible length of stay is an essential challenge, given the close association between longer length of stay and increased morbidity and mortality in the intensive care unit (1), because the longer the stay in the ICU, the greater the risk of iatrogenic complications, especially infectious complications (2), due to the use of invasive techniques and the lack of patient immunity (3). Among patient-related factors, age is significantly associated with a long stay in intensive care (1-4).

It can be said that a prolonged stay may be associated with a more or less advanced age, but this may be explained by the frequency of comorbidities at this period of life.

Numerous studies have shown that length of stay differs according to the source of admission of patients (5).

In our study, using bivariate analysis, we found that there was a statistically significant association between the length of stay and the length of stay of patients admitted from neurosurgery (35%). This result may be attributed to the fact that neurosurgical patients often present with more severe pathologies and benefit from more prolonged and specialised procedures. As a result, they require longer periods of monitoring, unlike other post-operative patients who have shorter lengths of stay (6).

Our study clearly highlights the seriousness of the traumatic pathology: 19% of prolonged stays, represented by head trauma associated or not with polytrauma (80%), which is reproducible in most series showing a high length of stay in head trauma patients (7).

Numerous generalist scores have been developed, but only a limited number are used routinely, in addition to visceral failure scores, which are more useful for daily monitoring of a patient than for predicting the final prognosis (8).

In our study, we were mainly interested in the APACHE (Acute Physiologic and Chronic Health Evaluation) score. The high value of APACHE II had a significant relationship with the incidence of prolonged stay ($p > 0.05$) and the mean APACHE II is 20.79.

Length of stay is one of the indicators used to measure the performance of intensive care units. The pathologies responsible for prolonged stay are often multiple and interrelated in the same patient, making it difficult to interpret the imputability of a particular factor.

Several authors have studied the specific prognostic factors for a particular pathology (9-11). In our study, neurosurgical pathology, whether traumatic or not, was the main cause of prolonged stay 35%.

Neurosurgical patients often present with more severe pathologies and benefit from more prolonged and specialised procedures. As a result, they require longer periods of monitoring, unlike other post-operative patients who have shorter lengths of stay (11).

From all the studies it can be deduced that neurosurgical pathology, whether traumatic or not, remains a major cause of long stays, whatever the efforts made or the economic or personal resources deployed. Similarly, the incidence of long stays in neurosurgical patients is all the greater if the damage is more severe (low GCS, mass effect on the CT scan, presence of HTIC, etc.). Some demographic factors, namely age and sex, have also been incriminated, but this association can be explained by the frequency of comorbidities and the complexity of patients at an advanced age on the one hand and the frequency of traumatic pathology in males on the other (12-20),

In our study, despite the long length of stay, the mortality rate was 58%. In the literature, regardless of the study, mortality rates in intensive care and in hospital for this specific patient population are found to be significantly higher, varying from 15 to 44% for mortality in intensive care and from 25 to 49% for in-hospital mortality (21-22).

In our study, nosocomial infection was considered to be an almost "inevitable" complication of prolonged stay, and we recorded a rate of 58% of nosocomial infections complicating prolonged stay. This remains a very high rate.

Conclusion

Intensive care patients are a heterogeneous group with severe illnesses most often associated with several comorbidities, which means that the length of stay varies from one patient to another. This study provided a detailed assessment of the length of stay in the surgical intensive care unit.

The rate of prolonged stay (>10 days) in this department is of the order of 8.03%, and is influenced essentially by the neurosurgical and traumatic reasons for admission, as well as the APACH severity score.

The incidence of prolonged stays remains relatively high in our study, and this has a significant economic impact. A great deal of effort needs to be made to reduce the length of stay, in particular by setting up weaning or post-intensive care units, especially for neurosurgical patients, to enable specific care to be continued in an environment that is safe, while preserving the capacity of intensive care units and reducing the economic impact of a prolonged stay.

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