Outcome of Critically Ill Patients Admitted in Intensive Care Unit of Tertiary Care Hospital of Nepal

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Abstract

Introduction: Intensive care unit (ICU) is a place where critically ill patients are treated. Decreasing the mortality of patients is one of the major concerns of the Intensive care unit.

Methods: This is a retrospective study. All the patients admitted to the New ICU, Bir Hospital over a period of 5 years (April 2009 till April 2014) were included. The data were collected from an admission register. These data were transferred into SPSS version 21 for analysis.

Results: During the study period, 1115 patients were admitted; among them 58% were male, 42% were female and 72% were medical patients and 28% were surgical patients. The mean age of the patients admitted in ICU was 47±20 years. The mean days of the patients who stayed in ICU were 6.67±.56 days. During the ICU stay 55% of patient’s required mechanical ventilation. The mean days of patients in ventilator were 2.7±5.5 days. Among the patients who were admitted, 63% were improved and discharged from the ICU, 28.7% expired, 8.3% left against medical advice (LAMA).

Conclusion: The most commonly admitted patients in New ICU were of male gender, age group of 20-39, medical patients and patients with problem related to the gastrointestinal system. The outcome the female patients, age group of 20-39, surgical patients were good. Relative risk in the patients when ventilated mechanically was 5.52. The cases of poisoning have the best outcome.

Keywords: Intensive care unit, outcome,

Introduction

Intensive Care has emerged as a distinct specialty in the world over the last 3-4 decades. Compared with other medical specialties, intensive care medicine is a relatively young discipline but it has become an essential part of the medical system. The importance of mechanical ventilation was mostly realized in the polio epidemic in Copenhagen in 1952 where the mortality rates reduced from 90% to 40% following its introduction. This gradually led to the recognition of the importance of close monitoring and vital function support in the treatment of life threatening diseases. Since the patients are critically ill, intensive care unit needs highly skilled staffs and sophisticated instruments for the management of patients. It is an expensive unit requiring huge resources such as advanced monitors, specific organ support equipments and highly skilled doctors, nursing and technical staffs. The care of critically ill patients is a co-operative venture involving the contribution of broad range of health care professionals.

In the country like ours most of the health care cost must still be paid by the patients or their relatives. This is not only puts an enormous financial burden on patients but also substantially limits public accessibility to hospitals and in particular to ICUs. A severely ill patient commonly requires more expensive treatment that puts a higher financial burden on the family, whereas the patient has a higher probability of dying, with all the money invested being lost. To avoid a tragic scenario with a bankrupt family mourning over their dead family member, therapies often remain inadequate because of limited funding. So, decreasing...
the mortality of patients should be one of the major concerns of the Intensive care unit. There are very few data that has been published related to the ICU related mortality in our country. Audit and the studies related to the ICU outcome helps to improve the service given toward critically ill patient and make health polices.

We have conducted this retrospective study to find out the outcome of the patients who were admitted in the New ICU within the period of 5 years. New ICU is a five bedded mixed general ICU of Bir Hospital which is a tertiary care hospital of Nepal embodied with National Academy of Medical Sciences.

**METHODS**

This is a retrospective study carried out in five bedded New ICU of Bir Hospital which is government run tertiary care centre. All the patients admitted to the New ICU over a period of five years (from April 2009 till the end of April 2014) were enrolled in the study. The data were retrieved from ICU record register and patient’s medical records. The data were analysed by using SPSS version 21. The variables analyzed include patient’s gender, age, and length of ICU stay, distribution of the patients according the department, use of mechanical ventilation and their outcome, diagnosis by system and their outcome. In assessing outcome of the patients, those who were discharged to the ward after treatment were considered as good outcome (Improved), those who died during the treatment were considered as bad outcome (Expired) and those patients who were taken away by the relatives from the ICU against the medical advice were considered as leave against medical advice (LAMA).

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**RESULTS**

During the study period, the total number of the patients admitted in New ICU was 1115. Among them 58% were male and 42% were female. The mean age of the patients admitted in ICU was 47±20 years. The mean days of the patients who stayed in ICU were 6.6±7.6 days. Among the total number of patients admitted in the ICU, 72.4% were medical patients and 27.6% surgical patients. During the ICU stay, 613 (55%) of patients required mechanical ventilation. The mean days of patients in ventilator were 2.7±5.5.

Among the total admission, 703 (63.05%) patients improved and were discharged from the ICU, 320 (28.7%) patients expired during treatment and 92 (8.25%) patients were taken away from ICU by their patient’s parties against medical advice (Fig 1).

**Table 1: Gender and outcome**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Outcome of patients in numbers (%)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Improved</td>
</tr>
<tr>
<td>Male</td>
<td>397 (61.4%)</td>
</tr>
<tr>
<td>Female</td>
<td>306 (65.4%)</td>
</tr>
</tbody>
</table>

**Figure 1: Outcome of the patients**

**Figure 2: Outcome of the patient and age**

**Figure 3: Outcome and the departments**
Among the total number of patients admitted in ICU, 229 (20.5%) patients were admitted with the problem in gastrointestinal system 222 (19.9%) were admitted with the problem in respiratory system, 180 (16.1%) patients were of sepsis, 171 (5.3%) patient admitted with the problem in nervous system, 130 (11.7%) patients admitted with the ingestion of poison, 74 (6.6%) cases were of trauma, 39 (3.5%) cases of patients admitted related to urinary system, and 36 (3.2%) of the patients admitted due to the problem related to the endocrine system. The number of patients admitted to ICU for the miscellaneous causes were 34 (3.05%).

**DISCUSSION**

Over the past three decades, critical care has matured as a distinct subspecialty in most of the part of developed countries. But it is still in the developing stage in our country. Lack of ICU bed especially in the government hospitals, shortage of qualified manpower and the sophisticated monitoring facilities are current problem in ICU. ICU is the final destination for the critically ill patients who are admitted with big hope of getting better.

In this study total numbers of the patients included were 1115 over the period of five year. More male patients were admitted than female patients (58% vs. 42%) which was similar to the study done S. Koirala et al. Other study has also shown that the men receive more critical care treatments for almost all kinds of conditions. The data shows the chances of getting admitted in ICU for the male is more than the female. Male are exposed to the occupational hazards and social hazards like smoking, drinking alcohol etc. These hazards lead them to the chronic illness. Males being the main source of income in most of the Nepalese households they get more preferences for continuing treatments in ICU. The highest numbers of the patient were admitted in the age group 20-39 years in this study.

There was more number of the medical cases than the surgical cases (72% vs. 28%) admitted in the ICU. The results were similar with the study done by MHM Delwar H et al. In the study done by Koirala S. et al more surgical cases were admitted than medical patients. Usually, in mixed ICUs, predominant cases were of surgical speciality. New ICU has lesser number of surgical admission, this is due the fact that there are two bed equipped with ventilator in the post operative ward of our hospital where general surgery cased are managed postoperatively. Beside that we also have cardio thoracic and vascular ICU and neurosurgical ICU where the respective cases are managed pre and postoperatively. Their cases are admitted to the new ICU only when their beds with ventilator facility are occupied or they require prolong ventilation and other organ support.

Our study shows that among the total admission 703 (63.05%) patients have improved 320 (28.7%) were expired during the treatment. The results were similar to the study done by Koirala et al. Their study shows discharged rate was 61% and mortality rate was 26%.

Our study shows, the survival rate in female patients was better than the male during ICU admission. The highest number of survival was in the age group of 20-39 years of age. Being young with minimal co-morbidity may be the reason for the good outcome. Most of the patients who were admitted with the ingestion of the poison are in this age group. Studies have shown age of the patients admitted in ICU have been found to be inversely proportional to survival.

The outcomes of the surgical patients were better than the medical patient. The relative risk of being medical patients was 1.16. Most of the medical patient having multiple chronic illnesses make them land into ICU thus their survival rate was low. Our results are similar to the study done by MHM Delwar H et al.
This study shows that the mortality is higher in the patients who needed mechanical ventilation during ICU stay. It is obvious that the patients who required mechanical ventilation were sicker. Our results are similar to the study done by Beatriz et al.\textsuperscript{13}

Our study shows that the patients who were admitted with the ingestion of poison have the best outcome. Our findings are similar to other studies.\textsuperscript{5,11} Most of these cases were admitted with the ingestion of organophosphorous poison and other few cases with drug overdose like paracetamol, benzodiazipine and antidepressants. Most of these patients were of relatively young age group.

Our study shows that the patients with sepsis with multi organ failure had higher rates of mortality (41.7%). In the study done by Braber A et\textsuperscript{14} al the most common cause of ICU mortality was sepsis (48.3%). Other studies also show the mortality rate of sepsis similar to our studies.\textsuperscript{5,15,16} The cause of mortality being higher in sepsis patients could be due to its late recognition and delayed treatment at its initial phase.

However our study had certain limitations, like we did not follow the conditions of the patients who have been discharged from ICU to wards. The patients who were taken away against the medical advices were 8.25%. These patients were either very sick, not improving despite of treatment or the financial burden due to long ICU stay. The condition of these patient could not be assessed otherwise mortality would have gone high. The severity of illness before ICU admission and presence of co-morbid condition are significant factors in patient survival which this study could not addressed. This study also has not looked upon the length of stay in ICU related to mortality which is also one of the factors associated. So, further study need to be done in these fields.

CONCLUSION

The most commonly admitted patients in New ICU were of male gender, age group of 20-39, medical patients and patients with problem related to the gastrointestinal system. The outcome the female patients, relatively younger age group and surgical patients were good. Relative risk in the patients when ventilated mechanically was 5.52. The cases of poisoning have the best outcome.

REFERENCES