BRIEF ORIGINAL

Influence of age in the duration of the stay and mortality of patients who remain in an Intensive Care Unit for a prolonged time ☆

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Abstract
Backgrounds and objective: The true role of the age in the prognosis of patients admitted in the ICU is not known. This work analyzes the influence of age on the duration of the stay and mortality of patients who remain in an Intensive Care Unit (ICU) for a long period of time.
Patients and method: A retrospective, observational study was performed with patients hospitalized $\geq$14 days in the ICU. Three age groups were established: <50, 50–70 and >70 years. The influence of different factors on the relationship existing between stay and age was studied. In addition, stay and survival in the ICU, hospital and at one year were analyzed based on the groups.
Results: A total of 707 patients were included. Significant differences in hospital stay ($p = .183$) were not found among the three groups. The older group, which showed greater severity on admission, was the group undergoing the most tracheostomies (74.7%) and extrarenal purification (HDF) (10.8%). When the influence of factors such as APACHE II, pre-ICU stay, origin, tracheostomy or hemodiafiltration (HDF) were analyzed, no relation was found between stay and age of patient. Survival decreased as age increased.
Conclusions: No differences were found in stay based on age, although a difference was found in mortality.
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PALABRAS CLAVE

Estancia;
Mortalidad
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intensivos

Influencia de la edad en la duración de la estancia y en la mortalidad de los pacientes que permanecen de forma prolongada en una Unidad de Cuidados Intensivos

Resumen

Fundamentos y objetivo: No se conoce cuál es el verdadero papel de la edad en el pronóstico de los pacientes ingresados en las Unidades de Cuidados Intensivos (UCI). En este trabajo se analiza la influencia de la edad en la duración de la estancia y en la mortalidad de los pacientes que permanecen de forma prolongada en una UCI.

Pacientes y método: Estudio retrospectivo observacional, con pacientes ingresados ≥14 días en UCI. Se establecieron 3 grupos de edad: menores de 50, entre 50–70 y mayores de 70 años. Se estudió la influencia de diferentes factores en la relación existente entre estancia y edad; además se analizó la estancia y la supervivencia en las UCI, hospitalaria y al año en función de los grupos.

Resultados: Se incluyeron 707 pacientes. No se encontraron diferencias significativas entre los 3 grupos en la estancia hospitalaria (*p* = 0,183). El grupo de mayor edad, que presentaba una mayor gravedad al ingreso, fue el que se sometió a más traqueotomías (74,7%) y de depuración extrarrenal (HDF) (10,8%). Al analizar la influencia de factores tales como el APACHE II, la estancia pre-UCI, la procedencia, la traqueotomía o las HDF, no se encontró relación alguna entre la estancia y la edad del paciente. La supervivencia decrecía a medida que se incrementaba la edad.

Conclusiones: No se hallaron diferencias en la estancia en función de la edad, aunque sí en la mortalidad.

Background

The demonstration of a relationship between age and prognosis in specific populations, such as patients admitted to intensive care units (ICUs), is difficult with the available literature. This is primarily because we must take into account that an extremely ill young patient is more likely to be admitted to the ICU than a much older patient with the same disease. This action is entirely logical but implies a bias that is difficult of account for if total hospital mortality is not examined.[1–3]

The age of patients who are admitted to the ICU increases parallel to the increases in life expectancy of the general population. In fact, elderly patients represent between 42% and 52% of admissions to the ICU, and almost 60% of the days spent in the ICU.[4] By extending these data to mortality, we can assume that elderly patients admitted to the ICU will have a poorer prognosis than younger patients. However, there are studies that demonstrate that the prognosis of these patients is more closely linked to the severity of the acute disease than to chronological age itself.[5] For this reason, a number of studies have indicated that age is not an actual predictor of the prognosis of these patients in the ICU, given that the most elderly patients who survive have a better prognosis than the younger patients.[6]

With this background, we must consider that age itself should not be a limiting factor in the application of intensive treatment to elderly patients, even if they remain for an extended period in the ICU.[7]

The aim of our study was to analyze the influence of age on length of stay and on the mortality of patients who remain ≥14 in the ICU.

Patients and method

This was a 7-year (2004–2010) observational retrospective study on adult patients who were hospitalized for ≥14 days in an adult multipurpose ICU in a tertiary hospital. Despite the lack of consensus on the number of days that should constitute an extended stay, we established this number to perform the comparison with the majority of consulted literature. Readmissions were excluded, even if they were the result of causes other than those that motivated the initial stay in the ICU. This was done to avoid multiple prognostic assessments of individual patients. We also excluded patients transferred from the ICU to other centers (reference centers or family decision), given that this information was not available in the database. For the same reason, we also excluded from the long-term mortality study those patients who were not residents of Gran Canaria. We analyzed demographic variables such as age; gender; patient type; APACHE II; length of stay in the ICU, in pre-ICU (length of hospital stay in days prior to ICU admission) and in hospital; the need for techniques such as mechanical ventilation (MV) and renal replacement therapy (HDF). We studied the differences among patients grouped into age ranges. To establish the age groups, we performed a descriptive analysis of the age of these patients, observing that the first quartile was approximately at 47 years of age and the third was at 70 years. We therefore created 3 groups; the first consisted of patients younger than 50 years of age, the second between 50 and 70 years of age and the last older than 70 years of age. We also analyzed, using ANOVA, the influence of other factors such as APACHE II, pre-ICU stay, origin, tracheotomy and HDF in the relationship between length of stay and patient age. Lastly, we studied the survival in the