



“PREDICTORS OF MORTALITY AND LENGTH OF HOSPITAL STAY IN ELDERLY PATIENTS ADMITTED IN MEDICINE INTENSIVE CARE UNIT IN A TERTIARY CARE HOSPITAL”

Internal Medicine

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KEYWORDS

INTRODUCTION

As our national policy of Government of India, elderly population is defined as age 60 years or above. There are nearly 10.4 crores elderly individuals, out of which 5.3 crores are females and 5.1 crores are males, as per Census 2011. The process of ageing results in gradual decline in almost all body functions, mainly in the cardiac performances, respiratory and renal functions, nerve impulse conduction, muscle strength, endurance, fragility and ability to maintain coordinated muscular effort, which may be due to structural and functional changes resulting in inability to restore homeostasis (1). Changes in cardiovascular system with age, increasingly sedentary life style in the elderly and associated co-morbid conditions (Hypertension, Diabetes Mellitus), congestive cardiac failure, cerebrovascular diseases and other chronic diseases make them more vulnerable to hospitalization. Elderly patients above 60 years now represent the largest group of patients admitted to the intensive care unit (ICU) setting. Hospitalization in the elderly persons are commonly due to diseases like coronary artery diseases, cerebrovascular stroke, heart failure, arrhythmias, hypertension or other chronic diseases like Chronic Obstructive Airway Disease (acute exacerbation), chronic kidney disease. The identification of geriatric patients at risk of poor hospital outcomes (i.e. prolonged hospital stay, in hospital mortality) is important to provide an effective health-care service. Predicting hospital outcomes at admission may facilitate the health-care organization, as it allows healthcare staff to optimally manage healthcare resources. It would help in establishing interventions or preventive measures that could improve survival in geriatric patients.(2).

In view of the limited data, on hospitalized geriatric patients, from resource-limited countries and its likely importance, this study was planned to identify the factors (demographic variables, clinical profile, biochemical profile, functional status) on admission which can predict short term mortality and length of hospital stay in elderly patients admitted to medicine ICU.

MATERIAL & METHOD

This study was conducted in ICU of department of Medicine of a tertiary care hospital. Many patients coming to our hospital were from rural areas. The study was carried out for 24 months from 1st November 2018 to 31st October 2020. We took permission from institution ethics committee (IEC) prior to commencement of study. Informed consent was taken from the patients prior to inclusion of patients in this study.

Inclusion Criteria:

All consecutive elderly patients, 60 years of age or older admitted to medicine ICU and provide informed consent were included in the study.

Exclusion Criteria:

Patients were excluded if they do not provide written informed consent, age <60 years, withdrawal of treatment during the ICU stay, discharge against medical advice

Statistical Analysis:-

Data (demographic, clinical, hematological and biochemical variables, ICU scores) were entered in Microsoft office excel worksheet. Elderly Patients were categorised as “survivors” or “nonsurvivors”, and variables (demographic, clinical, hematological and biochemical variables) were compared using bivariate analysis. Continuous variables were presented as mean $\pm$ SD and categorical variables were presented as proportions. Odds ratio were calculated to

determine the factors associated with mortality and prolonged length of hospital stay in ICU elderly patients. Statistical analysis was done by using descriptive and inferential statistics using chi square test and z-test for difference between two means and software used in the analysis were SPSS 24.0 version and GraphPad Prism 7.0 version and $p < 0.05$ was regarded as statistically significant.

OBSERVATIONS & RESULTS

A total of 259 elderly patients admitted to medicine ICU were enrolled in our study having the age of 60 years or more. Out of which 36 patients were excluded who did not give written informed consent or who took discharge against medical advice. Remaining 223 elderly patients were included in the study. Among 223 subjects, majority 153(68.61%) were in the age group of 60-70 years. Distribution of Waist to Hip Ratio was divided in 3 tertiles among males and females. Among males most of them were in low tertile group (WHR below 0.94). WHR among females was < 0.83 in 67% and 0.83 to 0.89 in 23%. The association of Waist to Hip Ratio of the elderly patients with mortality or length of hospital stay in ICU was not found to be statistically significant. The most common comorbidity associated with elderly patients admitted in medicine ICU was Hypertension (39.91%), followed by Diabetes mellitus(30.94%), Ischemic heart disease(9.42%), Stroke(5.38%), COPD (3.59%), Malignancy (1.79%). Among the habitual history 16.14% of elderly patients were alcoholics and 8.52% elderly patients were smokers admitted in medicine ICU. The association of Diabetes mellitus and malignancy with mortality in elderly patients was found to be statistically significant. Among Clinical variables acute kidney injury (30.49%) was present in maximum number of cases, followed by hypotension(8.07%), invasive ventilation (8.83%), sepsis(9.42%), metabolic acidosis(11.66%). The association of acute kidney injury, hypotension, invasive ventilation, sepsis, metabolic acidosis and restriction of daily activities during last 1 year in the elderly patients with mortality in ICU was found to be statistically significant. The association of invasive ventilation, sepsis and acute kidney injury was found to be statistically significant with length of hospital stay. Whereas hypotension, metabolic acidosis was not found to be statistically significant with the length of hospital stay. History of falls was also not found to be statistically significant with the length of hospital stay

DISCUSSION

In our study mortality among elderly patients admitted to medicine ICU was 27.35 %. Studies done by Mahajan et al.(3), Bagshaw et al.(4), Kohli et al.(5), Sodhi et al.(6), showed mortality of 41.2%, 12%, 61% and 19.6% respectively.

In the present study, comorbidities was present in elderly patients as follows: Hypertension(39.91%), Diabetes mellitus(30.94%), ischemic heart disease(9.42%), Stroke(5.38%), COPD(3.59%) and Malignancy (1.79%). Out of which diabetes mellitus and malignancy was significantly associated with mortality. Similar correlation was seen in the study done by Shum et al.(7), which showed that diabetes mellitus and malignancy was associated with increased mortality. Studies done by Liao et al.(8), Lee et al.(9), Mazzone et al.(10), Magnette et al.(11), Mukhopadhyay et al.(12), showed that malignancy was associated with increased mortality. Studies done by Gayat et al.(9), Lee et al.(8), Mazzone et al.(2), Bagshaw et al.(4), Daubin et al.(8), Han et al.(7), Kohli et al.(5), Boumendil et al.(8), stated that mortality was increased in elderly patients having more comorbidities. Serum creatinine in elderly patients admitted in medicine ICU was statistically significantly associated with mortality in our study. Hemoglobin, TLCs, sodium, potassium, serum albumin, ALT, random blood sugar were not

associated with mortality. Study done by Lee et al.(5), Mukhopadhyay et al.(7), showed low levels of hemoglobin was associated with increased mortality. Study done by Gayat et al.(9), showed that leucocytosis was associated with increased mortality. Study done by Lee et al.(8), Han et al.(7), Kohli et al.(5), showed that serum albumin was statistically significantly associated with mortality. The study done by Liao et al.(8), Han et al.(7), showed random blood sugar was statistically significantly associated with mortality. In our study, increase in bilirubin was statistically significantly associated with mortality. Similarly, study done by Lee et al.(5), showed that increase in bilirubin was associated statistically significantly with increase in mortality.

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