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Title: Outcome and risk factor of very elderly patients over 90 years admitted to intensive care unit

Prof. Yun Su 23350 Sim sysliver@naver.com MD ¹, Prof. Tae Rim 23351 Shin trshinmd@hanmail.net MD ¹, Prof. Sang Myeon 23352 Park thoraxmd@hallym.or.kr MD ¹ and Prof. Dong Gyu 23353 Kim dongyu@hallym.or.kr MD ¹. ¹ Division of Pulmonary, Allergy and Critical Care Medicine, Department of Internal Medicine, Hallym University Kangnam Sacred Heart Hospital, Seoul, Republic of Korea .

Body: Backgrounds: Population worldwide is aging due to declines of both fertility and mortality rates. Consequently, demands for critical care and admission to intensive care unit (ICU) in very elderly patients are increasing. The evaluation of outcome and risk factor of very elderly patients admitted to ICU is important as implications on health resources in terms of triage. Methods: Clinical records of 183 patients (1.08 % of total 16939 ICU patients ≥ 18 years) over 90 years admitted to ICU were analyzed retrospectively from January 2003 to July 2012. Results: Causes of ICU admission were pneumonia(16%), heart failure(12%), cerebral infarction(11%). ICU mortality of patients over 90 years was 27% while ICU mortality of total patient ≥ 18 years was 14%. Risk factors of ICU mortality were analyzed in 155 patients except 33 patients transferred other healthcare center in state of hopeless. In univariate analysis, patients of chronic renal failure($p=0.023$), pneumoni ($p=0.006$), lymphocyte $\leq 1000 /m^3$ ($p=0.035$), creatinine ≥ 1.0 mg/dL($p<0.001$), albumin ≤ 3.0 g/dL($p=0.012$), cholesterol ≤ 130 mg/dL($p=0.010$), CRP ≥ 66 mg/dL($p=0.012$), SAPS II ≥ 37 ($p<0.001$), APACHE II ≥ 14 ($p<0.001$), Mechanical ventilation($p<0.001$), and vasopressor($p<0.001$) showed higher mortality. In multivariate analysis by Cox hazard model, risk factors of ICU patients ≥ 18 years were CRP ≥ 66 mg/dL(HR=3.118, $p=0.019$), SAPS II ≥ 37 (HR=5.813, $p=0.015$), and vasopressor(HR=2.851, $p=0.024$). Conclusion: Mortality of very elderly patients over 90 years admitted to ICU is high. Furthermore, a requirement of vasopressor, a high CRP and a high SAPS II score had poor prognosis in very elderly patients over 90 years admitted to the ICU.