Impact of hyponatraemia in critically ill patients

Dr Jayadave Shakher, Consultant Diabetologist and Endocrinologist
Nirav Gandhi, Final Year Medical Student (University of Birmingham), BSc (Hons)
Dr Govinda Raghuraman, Consultant in Anaesthesia and Critical Care

1. Birmingham Heartlands Hospital, Heart of England NHS Trust, UK
2. College of Medical and Dental Sciences, University of Birmingham, UK

Introduction

Hyponatraemia, defined as serum Sodium < 135 mmol/l, is one of the commonest electrolyte abnormalities seen in patients admitted to acute hospitals and is associated with increased morbidity and mortality. Impact of this condition is not adequately measured in critically ill patients admitted to intensive care unit. The aim of this observational study was to assess the incidence and outcomes of patients admitted to Intensive care unit (ICU) in a UK based setting.

Methods

This was a retrospective observational study that looked into the incidence of hyponatraemia and outcomes such as mortality, length of stay, ventilator days, renal days in patients admitted to ICU between January 2011 to March 2012. Sodium levels were evaluated at 4 distinct time frames that included admission to hospital, admission to ICU, discharge from ICU and discharge from Hospital. Appropriate statistical tests were applied for comparisons with hospital and ICU admission Na.

Results

1289 patients were admitted during this time. Incidence of hyponatraemia at hospital admission was 27.5% and out of this 7.5% were moderately and severely hyponatraemic (<130 mmol/l). Incidence at ICU admission was 22.3% of which 3.3% were in moderate or severely hyponatraemic. Patients with hyponatraemia (<135) at presentation to hospital had increased APACHE II and ICNARC scores (p=0.0001). Patients with hyponatraemia at admission to ICU also had increased APACHE II and ICNARC physiological scores. Overall there was increased mortality (35.9% vs. 21.2%, p=0.0001) and ICU length of stay, and increased ventilator days in hyponatraemic group compared to subjects with normal hospital admission sodium.

Discussion

This study confirms findings available in literature on the increased morbidity and mortality in patients presenting with hyponatraemia to hospital and ICU. However, whether this caused excess mortality and morbidity in these patients is difficult to ascertain and prospective studies are required to evaluate the effect of correction of sodium levels on mortality and morbidity.