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INTRODUCTION

- Critically ill patients are dependent on intensive medical support for survival. As it is important for critical care clinicians to accurately predict the outcome, several prognostic scoring systems have been developed to predict the severity of illness.
- Endocrinological and metabolic changes can occur in critically ill patients, which may affect the prognosis and outcome. The hypothalamic–anterior pituitary axis (HPA) plays a crucial role in the endocrine regulation of metabolic and immunological homeostasis.
- Although APACHE II is the most commonly used score in the prediction of mortality, it is insufficient to predict the mortality in some group of patients. An alternative approach is to measure the response of the endocrine system to the physiological stress of critical illness
- In this prospective study, we aimed to evaluate the pituitary–adrenal–gonadal–thyroid axis in the adult intensive care unit (ICU) patients in the admission and after the 15 days of admission, their outcome, and to evaluate the whether these hormonal changes contribute to the prognosis and mortality and also the association between these hormonal changes and APACHE II, SOFA scores, length of hospitalization, and mortality.

METHODS

- Patients hospitalized in adult ICU between May 2014 and January 2015 were enrolled in this study.
- Since 15 patients did not complete the endocrine tests 157 patients were included the study.
- Severity of illness was assessed by APACHE II and SOFA on admission to the ICU.
- Blood samples for hormonal evaluation were collected within the first 4 hours of ICU admission and 15 days later.

RESULTS

- Eighty five patients were in survival (S), 72 patients were in the non-survival (NS) group.
- Overall mortality rate 37% and overall APACHE II score and SOFA score were 19.9 ± 6.8 and 5, respectively.
- In the NS group, patients' mean age, APACHE II and SOFA scores on the admission were significantly higher.
- In the NS group median growth hormone (GH), estradiol (E2), cortisol levels were significantly higher whereas median follicle stimulating hormone (FSH), luteinizing hormone (LH), free triiodothyronine (fT3), free thyroxine (fT4) were lower.
- Fifteen days after admission, there was significant increase in median insulin-like growth factor-I (IGF-I) and adrenocorticotrophic hormone (ACTH) levels and decrease in median cortisol compared to baseline values.
- According the basal endocrine parameters the predictive factors on mortality were; age, basal SOFA score and hospitalization length. 15 days after the admission, age and Δ TSH was found the predictive factors on mortality

CONCLUSION

- In critical illness, activation of the HPA and the cortisol response are essential for survival. Variations in reported endocrine-based prediction of outcome may be related to the timing of sampling, reliability and sensitivity of the assays used, and to differences in patient populations among studies. In addition, the severity of illness varied among studies.
- But our study revealed that none of the endocrine parameter contribute to the prognostic factor except Δ TSH. This may be due to the factors mentioned above. Also we did not performed dynamic tests of thyroid and adrenal functions as these tests are difficult in critically ill patients and the results are subjective.
- In conclusion, we think that Δ change in TSH can be used together with APACHE II or SOFA scores in the prediction of prognosis in tertiary mixed type ICU.