Effect Of Vitamin D Deficiency In Critically Ill Patients

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RATIONALE: Vitamin D modulates a variety of processes including host defense, inflammation, immunity and repair. Vitamin D deficiency is thought to be prevalent in critically ill patients admitted to the Intensive Care Unit (ICU). Lack of sunlight, use of sunscreen and nutritional impairment are implicated as causes. We sought to examine Vitamin D deficiency in ICU patients relating to their outcome.
METHODS: We collected the Vitamin D levels of those ICU patients at the MHRI ICU from July 1 – Dec 31, 2010, whose Vitamin D was checked during their ICU stay. Demographics, co-morbidities, clinical, laboratory and outcome variables were recorded. Simplified Acute Physiologic Score II (SAPS II) was computed. Patients were categorized into low level (<30 ng/ml) and optimal level (>30 ng/ml) groups based on their Vitamin D level. Patients categorized into the low level group were further subdivided into undetectable (≤10 ng/ ml), deficient (11-20 ng/ml) and insufficient (21-29 ng/ml). The project was approved by the Institutional Review Board and statistical analysis was performed.
RESULTS: Of 230 patients admitted to the ICU between July 1 to Dec 31, 2010, only 41 (17%) had Vitamin D levels checked. Of those, 35 (85%) had low levels of Vitamin D. Twenty four percent (10/41) were in the undetectable group, 29% (12/41) in the deficient group, and 32% (13/41) were classified as insufficient. Only 15% (6/41) had a normal Vitamin D level. Sixty six percent (23/35) of patients were over 65 years of age in the low level group. The median ICU length of stay was 8 days and hospital length of stay was 13 days on low level group.
Using multiple variable regression analysis, older age and Vitamin D deficiency significantly associated with ICU length of stay ($p<0.0001$) and hospital length of stay ($p<0.0001$).
CONCLUSION: The value of Vitamin D in the human body goes beyond the calcium – bone homeostasis. The severity of Vitamin D deficiency in elderly patients seems to be predictive of longer ICU and hospital lengths of stay. Further study is needed which may lead to the recommendation of supplementation in elderly patients to better improve outcome.

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