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Cut-off value of optimal postburn duration to predict 25(OH) vitamin D deficiency in burn patients

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Objective
Burn patients constitute high risk population for vitamin D deficiency. We investigated optimal factor related to burn injury and then cut-off value of optimal burn factor according to burn types for predicting 25(OH) vitamin D deficiency in burn patients undergoing rehabilitative therapy.

Methods
This was a retrospective cross-sectional study, 524 participants of 756 inpatients undergoing rehabilitative therapy were enrolled from January 2014 to April 2017. Data were collected for 25(OH) vitamin D levels, percentage of burned body surface area (BSA), length of from injury to sampling (LOS), burn type, body mass index (BMI), smoking, intensive care unit stay history, depression, pain, and itching. 25(OH) vitamin D deficiency was defined as a plasma level of <20 ng/mL.

Results
All of flame burn (FB), electrical burn (EB) and other burn types had significantly longer LOS in 25(OH) vitamin D deficiency groups (p<0.001, p<0.001 and p=0.024, respectively). After adjusting for age, burned BSA and BMI, burn subjects had significantly risks of vitamin D deficiency from 1.97 to 9.12 times according to an increase in LOS quartiles (adjusted odds ratios = 1.97 to 9.12, all p<0.05). Cut-off values of optimal LOS to predict 25(OH) vitamin D deficiency were 42.5 days for FB, 54 days for EB and 47 days for other burns (p<0.001, p<0.001, p=0.033, respectively).

Conclusion
postburn duration was optimal burn factor for predicting risk of 25(OH) vitamin D deficiency. We suggest that 25(OH) vitamin D level should be tested for burn patients when postburn duration exceeds cut-off values of LOS although initially 25(OH) vitamin D level was >20ng/ml in order to prevent for post-burn complications associated with vitamin D deficiency.