

## Abstract Submission No.: A-1129

### Comparison and Evaluation between second-generation PTH assay and LC-MS/MS for PTH

Min-Sun Kim<sup>1</sup>, Eun Young Lee<sup>2</sup>, Samel Park<sup>2</sup>, Hyun-Kyung Park<sup>3</sup>, Mikyoung Lee<sup>3</sup>

<sup>1</sup>Department of Laboratory Medicine, Soon Chun Hyang University Cheonan Hospital, Korea, Republic of

<sup>2</sup>Department of Internal Medicine-Nephrology, Soon Chun Hyang University Cheonan Hospital, Korea, Republic of

<sup>3</sup>Department of Laboratory Medicine, Seoul Clinical Laboratories, Korea, Republic of

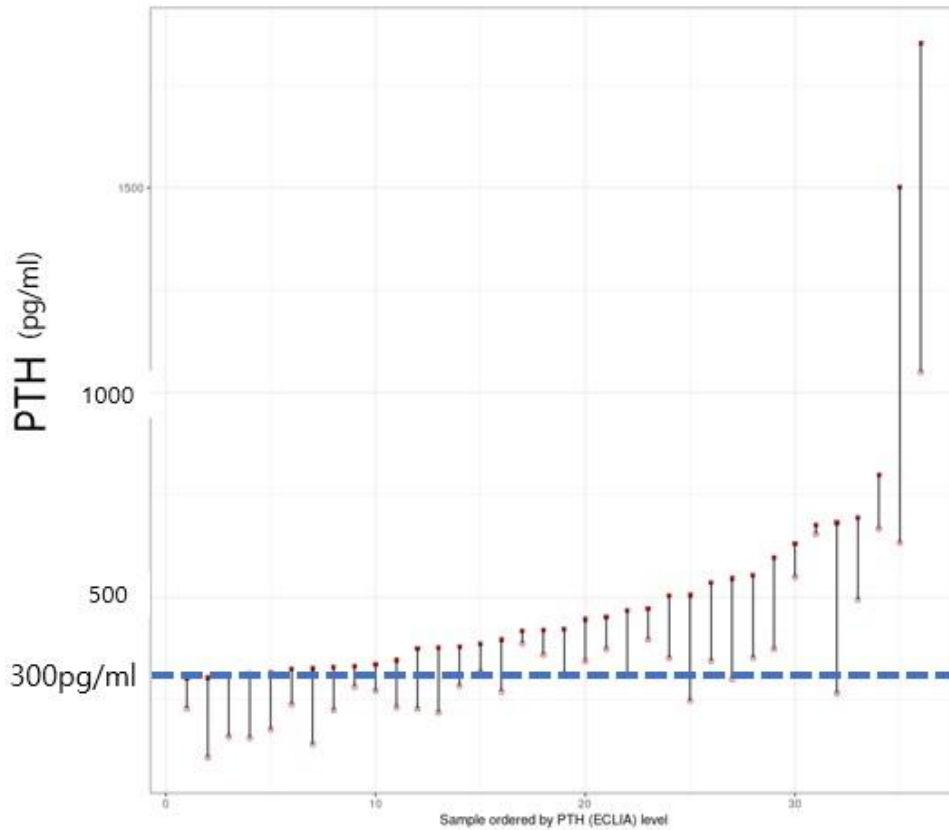
**Objectives :** Parathyroid hormone (PTH) measurement is critical in managing chronic kidney disease (CKD)-mineral bone disorder. However, the lack of standardization in PTH assay is challenging. In this study, we compared electrochemiluminescence immunoassay analyzer (ECLIA) and liquid chromatography with tandem mass spectrometry (LC-MS/MS) to find standardizing PTH measurements.

**Methods :** Serum samples from outpatients, including those undergoing hemodialysis, were collected. We used the second-generation PTH assay from Roche and LC-MS/MS from Agilent.

**Results :** A total of 378 patients (214 men and 164 women), with an average age of 60 years (range 16-90 years) participated. The number of patients who participated in each CKD stage was 56 in stage 1, 70 in stage 2, 76 in stage 3, 66 in stage 4, and 110 in stage 5. The mean PTH results by ECLIA was 117.4 (range 4.5-1853) pg/mL, while the mean PTH results measured by LC-MS/MS was 80.8 (range 3.7-1050) pg/mL. The mean results of PTH by CKD stage tested by ECLIA are 37.0 pg/ml in stage 1, 35.1 pg/ml in stage 2, 44.1 pg/ml in stage 3, 75.0 pg/ml in stage 4, and 286.8 pg/ml for stage 5 (p-value<0.001). The coefficient of determination between the two methods was 0.9135. The mean results of PTH by CKD stage tested by LC-MS/MS are 28.1 pg/ml in stage 1, 25.6 pg/ml in stage 2, 30.8 pg/ml in stage 3, 55.6 pg/ml in stage 4, and 192.5 pg/ml for stage 5 (p-value<0.001). The percentage difference of PTH results for each measurement method was the highest in CKD stage 5. In particular, the 17 cases showed discrepancies around the KDOQI therapeutic range in CKD stage 5.

**Conclusions :** The differences between PTH measurement methods are shown in all stages, particularly for samples with stage 5 CKD. A calibration factor between PTH measurement methods is required for the discrepancy.

figure 1.jpg



- The graph of PTH results by ECLIA or LC-MS/MS,
  - X axis shows the results of PTH > 300pg/ml sequentially by ECLIA method. Y axis is the result of PTH by both methods.
  - ■, The results of PTH by ECLIA; ○, The results of PTH by LC-MS/MS