Inter-Method Variability for the Measurement of BAP: Implication for the Monitoring of CKD-MBD

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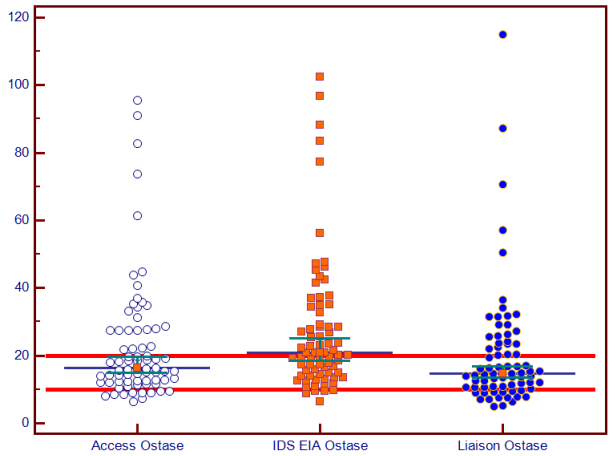
INTRODUCTION: KDIGO suggest measuring PTH or bone-specific alkaline phosphatase (BAP) to evaluate bone turn over. Little information is available regarding the variability between the diferent BAP methods; we aimed to compare the values obtained by 3 different automated BAP in a population of hemodialyzed (HD) patients.
MATERIAL AND METHODS: Serum from 76 HD patients, was obtained prior a hemodialysis session and stored at -80°C until analysis. BAP was determined with the Beckman Access, DiaSorin Liaison and IDS-iSYS in a single batch on the same day.

Deming regression

Assay	95% CI of slope	95% CI of intercept
IDS iSYS Ostase = 1.15 Beckman-Coulter Access +1.7	1.05; 1.25	-0.1; 3.5
DiaSorin Liaison = 0.97 Beckman-Coulter Access – 2.0	0.68; 1.25	-7.4; 3.5

Distribution of BAP levels observed in 76 HD patients according to the different methods used in the study. The solid reference lines at 10 and 20 µg/L represent the different cut-offs proposed to define low and high bone-turnover in HD patients, obtained with the former Hybritech Tandem Ostase assay.



Equivalent concentrations obtained with each BAP assay, when the value measured with the Beckman-Coulter Access is 10 or 20 µg/L

Assay	BALP (µg/L)	BALP (µg/L)	Mean biais (%)
Beckman-Coulter Acces Ostase	10	20	0
IDS iSYS Ostase	13.2	24.7	27.8
DiaSorin Liaison Ostase	7.7	17.4	-18

Concordance of the different methods to classify identically the patients when they present BAP values >10, between 10 and 20 and >20 µg/L with the Beckman-Coulter Access Ostase assay

Assay	Concordance with Access: BAP <10 µg/L	Concordance with Access: BAP comprised between 10 and 20 µg/L	Concordance with Access: BAP ≥20 µg/L
IDS iSYS Ostase	20%	100%	70%
DiaSorin Liaison Ostase	90%	89%	81%

In conclusion, we think that BAP determination offers an important added value in the management of CKD-MBD. However, analytical problems leading to intermethod variation should be overcome to still improve the usefulness of this bone biomarker in clinical practice

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