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THE PARATHORMONE RATIO 1-84/7-84 IS POSITIVELY INFLUENCED BY SERUM PHOSPHATE BUT NOT GFR IN CHRONIC KIDNEY DISEASE.

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Recent findings indicate that parathormone (PTH) assays in current use include the truncated 7-84 fragment, which has a different biological activity, and seems to antagonize the bone effect of the 1-84 PTH (whole or biointact PTH)¹. It has been suggested that the ratio 1-84/7-84 is a better indicator of bone turnover in end stage renal disease. However, the variation of these fragments and their relation to renal function and the phosphocalcic metabolism before dialysis has not been investigated yet.

We prospectively studied 51 patients aged 49.9 ± 11.2 yr undergoing glomerular filtration rate (GFR) measurement by inulin clearance. We measured serum calcium, phosphate and total PTH (totPTH) as well as whole 1-84 PTH using the DUO PTH IRMA kit from Scantibodies, CA, USA, distributed by Schering France. The difference between totPTH and whole PTH assay indicate the 7-84 PTH fragments.

GFR was 49.6 ± 16.3 ml/min/1.73 m². Plasma levels were for calcium : 2.41 ± 0.14 mmol/l, phosphate : 1.01 ± 0.15 mmol/l ; totPTH : 62.8 ± 80.5 (SD) pg/ml; whole PTH: 44.3 ± 62.7 ; 7-84 PTH: 18.5 ± 18.7 ; the ratio 1-84/7-84 was 2.42 ± 1.12 . We found a negative linear relationship between GFR and totPTH ($r=0.45$, $p=0.005$), whole PTH ($r=0.44$, $p=0.007$) and 7-84 ($r=0.47$, $p=0.003$). There was a strong positive correlation between whole PTH and 7-84 ($p<0.001$). The ratio 1-84/7-84 was independent from renal function, but was positively correlated with phosphatemia ($p= 0.04$), and CaP product ($p= 0.009$). This fact occurred despite the lack of relationship between PTH (1-84 or 7-84) and phosphatemia, calcemia or Ca_xP.

In conclusion, in stage III chronic kidney disease, there is an increase in PTH fragments with the declining of GFR. The 1-84/7-84 ratio, which is believed to best reflect bone metabolism, is not correlated to renal function and seems more influenced by serum phosphate and CaP product, which may indicate a sustained adaptative response in CKD.

¹ Waller et al., *Kidney Int* 2005, 67 :2338-45