Reviewer's report

Title: Hungry bone syndrome and normalization of renal phosphorus threshold after total parathyroidectomy for tertiary hyperparathyroidism in X-linked hypophosphataemia: a case report

Version: 1 Date: 23 September 2013

Reviewer: miriam casey

Which of the following following best describes what type of case report this is?: An unexpected event in the course of observing or treating a patient

Has the case been reported coherently?: Yes

Is the case report authentic?: Yes

Is the case report ethical?: Yes

Is there any missing information that you think must be added before publication?: No

Is this case worth reporting?: Yes

Is the case report persuasive?: Yes

Does the case report have explanatory value?: Yes

Does the case report have diagnostic value?: Yes

Will the case report make a difference to clinical practice?: Yes

Is the anonymity of the patient protected?: Yes

Comments to authors:

General comments

Well written case report describing an unusual mutation in the PHEX gene which led to extreme clinical side effects as a consequence of the introduction of drug treatment (cinacalcet) and cessation of phosphorus supplementation in X linked hypophosphataemia. Furthermore there appeared to be an overshoot rather than suppression of PTH levels when cinacalcet was reintroduced in conjunction with phosphate supplementation demonstrating that the PTH suppressing effect of Cinacalet was easily over ridden by the phosphate supplementations stimulatory effect on the secretion of PTH. Furthermore this patients reaction to IV Zolidronic acid whilst not unusual, showed a lower than normally seen total calcium level
with significantly symptomatic hypocalcaemia

Subsequent to the total parathyroidectomy an extremely long period of time was spent in severe hungry bone syndrome (160 days) and presumably this patient was hospitalised for this duration as she had a central line in situ. Once the phosphaturic effect of PTH was removed post surgery the phosphate supplementation could be discontinued which was unusual in this patient group. Fortunately the extremely high bone turnover preoperatively had normalized at one year post operatively. A total hip BMD (Z score) increase of 57% and spinal BMD (Z score) increase of 68% was an extraordinary gain consequent on the normalization of Bone turnover. The development of deteriorating renal function was unfortunate and I note there is no mention of the possible complication of nephrocalcinosis by the authors.

In the discussion, Loss of function of PHEX and its association with elevated FGF23 is described as well as the difficulty maintaining normal PTH levels during phosphate supplementation to avoid secondary HPTH. This patient unusually did not have any particular difficulty reabsorbing phosphate after total parathyroidectomy and TmP/GFR normalized relatively quickly. It entirely supports the hypothesis that without PTH, FGF23 cannot exert its phosphaturic action. It is a pity that FGF 23 levels were not available preoperatively and the authors may wish to refer to any available results on FGF 23 in such patients preoperatively if published previously.

Revisions necessary for publication: Document presence or absence of nephrocalcinosis

**Quality of written English:** Acceptable

**Declaration of competing interests:**

I declare that I have no competing interests