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## **HYPERCALCEMIA (TWO CASES)**

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In the previous *Newsletter* (DETERMINING OSTEOPOROTIC TENDENCIES FROM TISSUE MINERAL ANALYSIS OF HUMAN HAIR, TYPE I AND TYPE II), we stated that in the early or primary stages, endocrine imbalances are not easily discernable. This is usually the case since primary endocrineopathies do not always manifest themselves as overt pathological conditions but may remain sub-clinical. This is true particularly in regard to primary hyperparathyroid activity (PHPTH).

A number of investigators report that during PHPTH patients tend to develop hyperchloremic acidosis. Palmer and co-workers reported in the *Annals of Internal Medicine* in 1974 that the blood chloride to phosphorus ratio could be used as a diagnostic indicator for determining PHPTH. They found in the majority of hyperparathyroid patients that the blood chloride to phosphorus ratio was elevated. This study as well as others concluded that if the blood chloride to phosphorus was greater than 30 to 1, mild or severe hypercalcemia is probably due to an increase in parathyroid activity. If the chloride to phosphorus ratio is less than 30 to 1, the hypercalcemia is most likely due to factors other than PHPTH.

We are presenting the following cases, which may be beneficial to you in determining increased parathyroid activity in patients with high normal serum calcium or mild to moderate hypercalcemia.

### **CASE STUDY 1:**

A hair tissue mineral analysis (HTMA) was performed on a male patient in his early thirties. Partial results are shown in Figure #1. For some unknown reason, the attending doctor prescribed the patient a calcium supplement. Within a few days, he began experiencing debilitating pain, attributed to the passing of calcium oxalate renal stones. He continued developing stones for the next several days. The patient then consulted another doctor who in turn consulted with T.E.I.

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Figure 1.

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Calcium	53
Magnesium	4
Sodium	5
Potassium	3
Copper	1.5
Zinc	13
Phosphorus	13

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Even though the HTMA revealed a calcium level within the acceptable range, the tissue calcium to phosphorus ratio was 4:1, and the calcium to magnesium ratio was 13.2:1 and 7.1:1 respectively. A tendency toward PHPTH is suggested by the HTMA results, based upon the metabolic type, i.e. slow, with the elevated Ca:Mg ratio. This was further confirmed serologically by the high normal calcium and supported by the chloride to phosphorus ratio of 37:1.

Note: Metabolic classifications are based upon HTMA patterns (levels and ratios) and their relationships to and effect upon, the endocrine glands. These classifications as developed by Dr. D.L. Watts recognize and differentiate Types #1 - #4 of Slow Metabolism or Para-Sympathetic Dominance, and Types #1 - #4 of Fast Metabolism or Sympathetic Dominance.

The following information in addition to the HTMA was obtained from the doctor:

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	RESULT	NORMAL
Blood Calcium.....	11.9 mg/dl.	8.5 - 10.5
Blood Phosphorus.....	2.8 mg/dl.	2.8 - 4.5
Blood Chloride.....	103 mg/dl.	95 - 108
Chloride/Phosphorus ratio.....	37:1	

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We then directed the doctor to place the patient on PARA-PACK\*, MAGNESIUM PLUS\* and VITAMIN B6 PLUS\*. After the first day, the patient responded and in the seven months since has not had a recurrence of stones.



## CASE STUDY 2:

This study involves a female in her early thirties, whose history included hypercalcemia with hypocalcemia for several years. Recent serological data revealed the following:

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	RESULT	NORMAL
Blood Calcium.....	11.9 mg/dl.	8.5 - 10.5
Blood Phosphorus.....	2.6 mg/dl.	2.8 - 4.5
Blood Chloride.....	102.4 mg/dl.	95 - 108
Chloride/Phosphorus ratio.....	39:1	
Parathyroid Hormone.....	12 pg/ml	8 - 24

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Note: It was revealed that the PTH levels on some of her previous tests were high normal.

The patient is classified as a Slow Metabolizer (Type #1). The tissue calcium level was slightly below "ideal", but within normal range. However, with an elevated Ca/Mg ratio of 19:1, the hair tissue mineral analysis indicated a tendency toward primary hyperparathyroid activity.

Figure 2.

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Calcium	38
Magnesium	2
Sodium	2
Potassium	2
Copper	1.3
Zinc	20
Phosphorus	14

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Research and experience in recognizing and designing dietary and supplement suggestions for metabolic types through hair tissue mineral analysis (HTMA) of human hair has led us to the conclusion that increased animal protein is highly favorable for the slow metabolic types. There are many misconceptions concerning high protein intake. Animal protein is generally shunned by the majority of individuals, physicians, and nutritionists in the United States. This has led to the overlooking of its obvious benefits.

The patient was then placed on MAGNESIUM PLUS\*, VITAMIN B6 PLUS\* and PARA- PACK\*. Approximately three weeks later, follow-up blood tests were performed.

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	RESULT	NORMAL
Blood Calcium.....	10.6 mg/dl.	8.5 - 10.5
Blood Phosphorus.....	3.2 mg/dl.	2.8 - 4.5
Blood Chloride.....	104 mg/dl.	95 - 108
Chloride/Phosphorus ratio.....	32:1	

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As revealed by the follow-up evaluation and a reduction of symptomatology, these patients have responded well to the appropriate nutritional therapy. The literature reports that vitamin B6 and magnesium therapy is beneficial for the treatment of calcium oxalate stone formation, a fact that we have seen borne out clinically many times.

From these cases and other studies, we can conclude that individuals who have a tendency toward the formation of calcium oxalate stones may be experiencing primary hyperparathyroidism or have an increased tissue sensitivity to parathyroid hormone, regardless of the serum PTH levels. The beneficial effects of magnesium and vitamin B6 may be due to their influence upon the PTH itself or tissue sensitivity.

We can further conclude that in the Slow Metabolizer, an elevated calcium/magnesium ratio indicates a tendency toward increased parathyroid activity or increased tissue sensitivity to PTH, especially if the blood chloride to phosphorus ratio is greater than 30:1. If hypercalcemia is present but the chloride/phosphorus ratio is less than 30:1, then another cause of hypercalcemia must be ascertained. We should keep in mind that calcium oxalate stone formation is more prevalent in hypothyroid patients.

From these studies we can see that supplemental calcium therapy should be approached with caution when interpreting HTMA results. In the past, some authors have recommended that calcium supplementation be given when hair analysis results reveal an elevated calcium level. Whereas our research shows that the evaluation of the mineral ratios can provide far more valuable information for more specific therapies than can evaluation of the mineral levels alone.