

# Quadruple-H

A case of hyperparathyroidism, hyperthyroidism, hypercalcemia and hypertension

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## A case of Primary hyperparathyroidism and subsequent parathyroidectomy

<b>HOSP #</b>		<b>WARD</b>	Medical Ward
<b>CONSULTANT</b>	Dr. Jody Rusch	<b>DOB/AGE</b>	59 Y Male

### Abnormal Result

Hypercalcemia with hypophosphatemia

### Presenting Complaint

### History

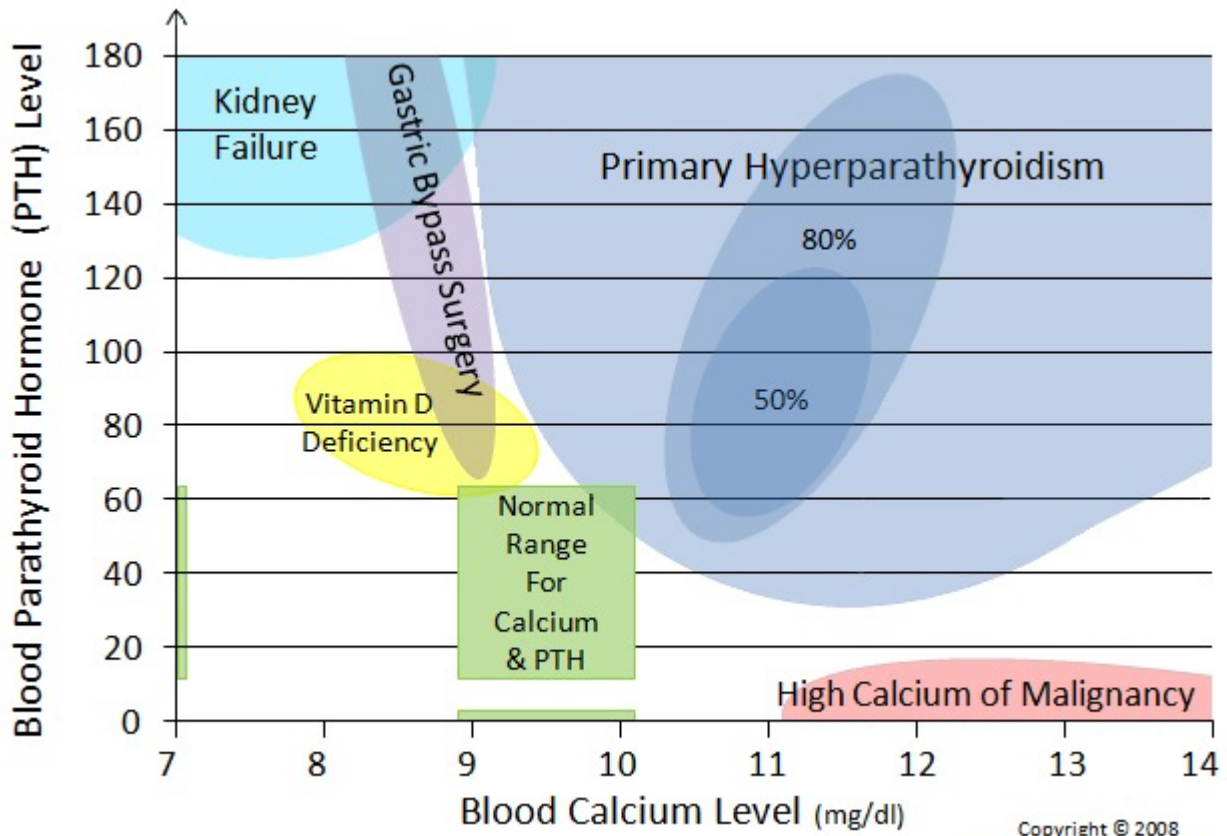
This is a patient with parathyroid adenoma (and resulting longstanding hypercalcemia and hypophosphatemia, which is typical). Adenoma was removed yesterday, acc. to what I can see on a frozen section. Phosphate is dropping even more 0.42 mM (0.78 – 1.42) (on bloods taken this afternoon) and it will likely become significantly lower even.

# Examination

## Laboratory Investigations

Test Set	Staff Notes	Test Item	Result	Units	Normal Values	Previous Result 1	Previous Result 2	Previous Result 3	Previous Result 4	Previous Result 5
CA		Calcium	2.90	mmol/L	2.15 - 2.50	3.49 17/04/2020 13:25	3.52 16/04/2020 07:30	3.75 15/04/2020 10:00	3.69 14/04/2020 08:30	3.69 13/04/2020 08:30
		Corrected calcium		mmol/L	2.15 - 2.55					
MG		Magnesium	0.65	mmol/L	0.63 - 1.05	0.70 17/04/2020 13:25	0.64 16/04/2020 07:30	0.73 15/04/2020 10:00	0.68 14/04/2020 08:30	0.71 13/04/2020 08:30
PO4		Inorganic phosphate	0.42	mmol/L	0.78 - 1.42	0.86 17/04/2020 13:25	0.62 16/04/2020 07:30	0.72 15/04/2020 10:00	0.71 14/04/2020 08:30	0.71 13/04/2020 08:30
ALB		Albumin	33	g/L	35 - 52	35 21/03/2020 13:00				
TBIL		Total bilirubin	3	umol/L	5 - 21	<3 21/03/2020 13:00	<3 20/03/2020 17:00			
		Total bilirubin auto com								
CBIL		Conjugated bilirubin (DI	<1	umol/L	0 - 3	<1 21/03/2020 13:00	<1 20/03/2020 17:00			
ALT		Alanine transaminase (U	12	U/L	10 - 40	10 21/03/2020 13:00	10 20/03/2020 17:00			
AST		Aspartate transaminase (U	60	U/L	15 - 40	10 21/03/2020 13:00	12 20/03/2020 17:00			
ALP		Alkaline phosphatase (U	281	U/L	53 - 128	338 21/03/2020 13:00	361 20/03/2020 17:00			
GGT		Gamma-glutamyl transfe	75	U/L	<68	42 21/03/2020 13:00	46 20/03/2020 17:00			
LD		Lactate dehydrogenase	390	U/L	100 - 190					
SIND		Serum haemoglobin inc	0			0 17/04/2020 13:25	0 16/04/2020 07:30	0 15/04/2020 10:00	0 14/04/2020 13:30	0 14/04/2020 08:30
		Serum bilirubin index	0			0 17/04/2020 13:25	++ 16/04/2020 07:30	0 15/04/2020 10:00	++ 14/04/2020 13:30	++ 14/04/2020 08:30
		Serum lipaemia index	0			0 17/04/2020 13:25	0 16/04/2020 07:30	0 15/04/2020 10:00	0 14/04/2020 13:30	0 14/04/2020 08:30
		Serum haemoglobin va	6.00			3.00 17/04/2020 13:25	4.00 16/04/2020 07:30	1.00 15/04/2020 10:00	5.00 14/04/2020 13:30	2.00 14/04/2020 08:30
		Serum bilirubin value	0.00			0.00 17/04/2020 13:25	1.00 16/04/2020 07:30	0.00 15/04/2020 10:00	1.00 14/04/2020 13:30	1.00 14/04/2020 08:30

PTH was initially significantly raised, although the renal function was normal. This means that there is likely hypercalcemia due to primary hyperparathyroidism.



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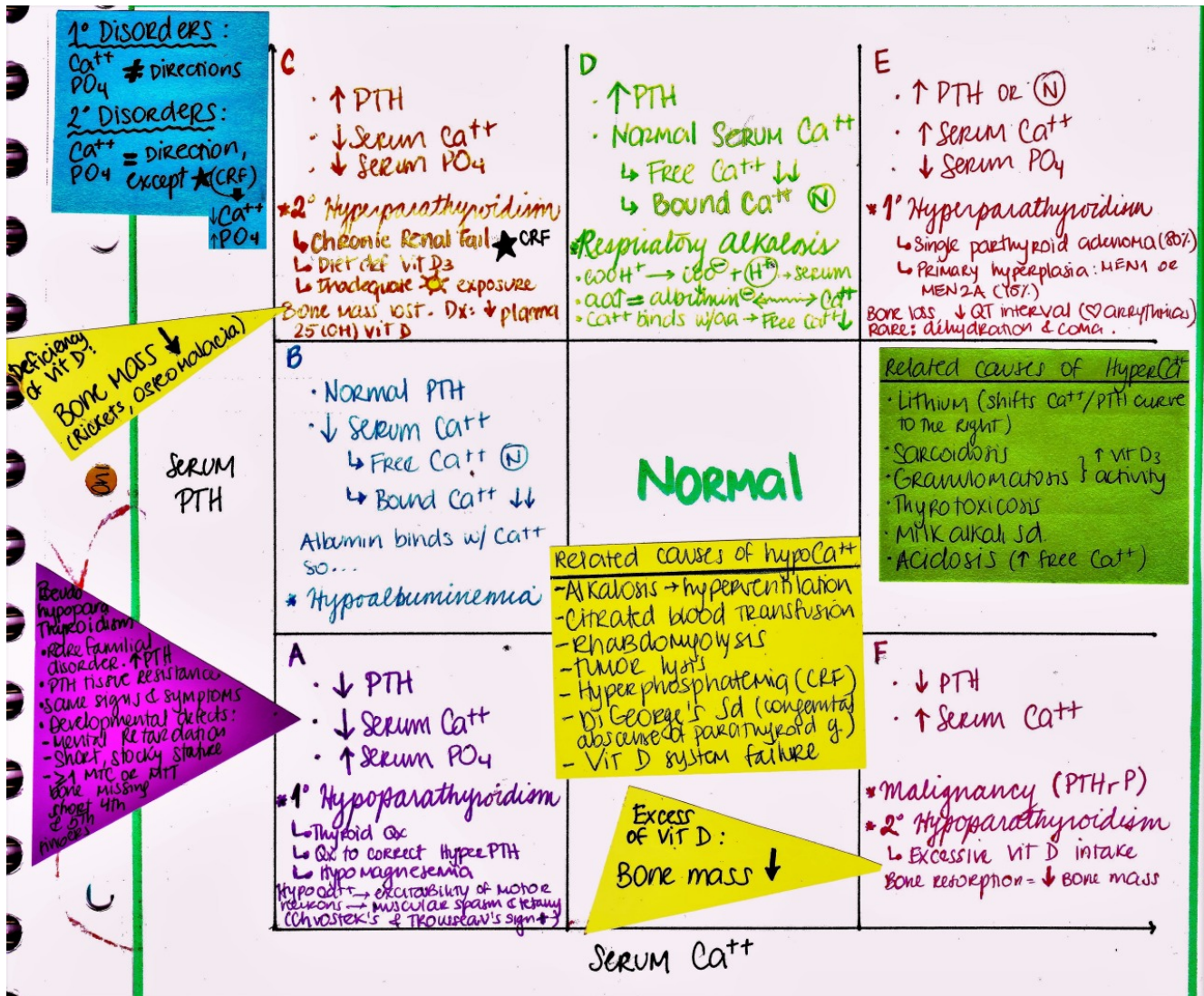


Chart drawn by [100lyric](#)

## Other Investigations

## Final Diagnosis

## Take Home Message

Phosphate supplementation may be quite important as there was longstanding autonomous PTH secretion, depleting stores of phosphate via phosphaturia (also PTH induced). There will likely not be much PTH secretion for some while, hence Vit. D activation will seize and little phosphate absorbed from the GIT due to longstanding lack of phosphate transporters. FGF-23 secretion will also seize and with the lack of PTH, the bone

will not resorb and the remodeling process will consume the phosphate in the blood. Most mechanisms to increase phosphate physiologically will likely be dysfunctional at this time. Because he will not adequately absorb phosphate from the GIT (because of failure to activate Vit. D, he may need supplementation of phosphate IV).

Kidneys will however be a bit less phosphaturic (due to lack of PTH), thus he may respond quite well to IV phosphate.