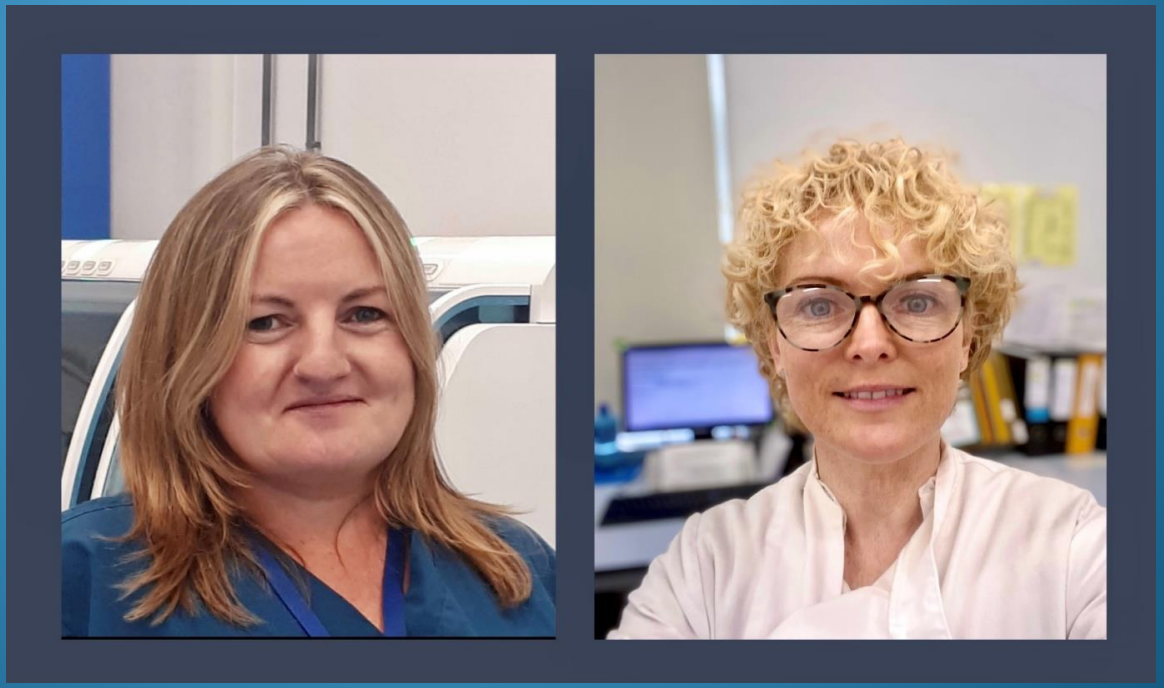
Parathyroid Adenoma

When the control is out of control



Connie Kilfeather

Anne Louise Bohan

Patient History AKA Jane

- 48 yr old female
- Very fit
- Loved her daily walks
- Mother of two teenagers
- Junk food her only vice

What happened next…

- Over the course of 6 weeks the following happened…..
- Sleepy
- Thirsty, very dry mouth
- Fatigued
- Weak
- Didn't want to go walking anymore
- Vomiting for 3 days
- Despite all this she managed to keep working!! Until the inevitable happened…

ED Presentation

- Normal Vitals
- Blood tests told a different story!!
- Potassium 2.6 mmol/L
- Troponin T hs 9ng/L
- PTH 2354 pg/ml
- Calcium >5 mmol/L (Ionised Ca 3.15 mmol/L)
- Role of POCT vital in her treatment. In SUH we have two Siemens Rapidpoint 500e blood gas analysers in the ED.

ED Treatment

Our patient presented with an albumin corrected calcium of >5.0 (ionised Ca 3.15) mmol/l and this required aggressive therapy.

Immediate initial therapy was IV saline infusion to correct the dehydration due to hypercalcaemia induced vomiting.

One dose of Zolodronic Acid a bisphosphonate was administered –this inhibits bone resorption and stops Ca release from bones. This is a slow acting drug and takes 2-4 days for maximum effect.

6 hours post arrival to ED Jane arrested 19 minutes : administered 2 doses of amiodarone and adrenaline , and 6 shocks of VF

Renal consult advised starting patient on Frusemide (diuretic)

Jane recovered from the arrest and was ROSC (return of spontaenous circulation) was sedated intubated and transferred to ICU.

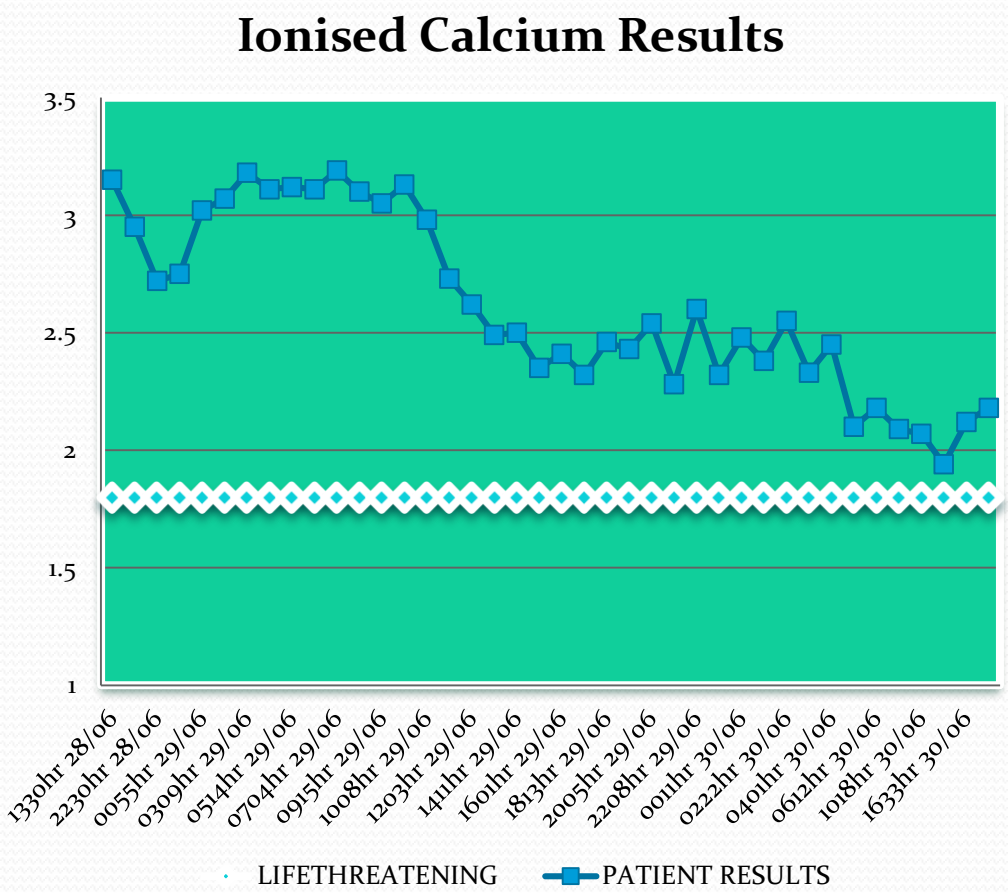
Classic Hypercalcaemia Presentation

bones, stones, groans, thrones, psychiatric overtones

ICU PATIENT MANAGEMENT

- Jane was intubated ,ventilated and started on continuous veno veno haemo dialysis filtration on admission to ICU on the 28th June and after 2 days on dialysis her ioinsed calcium was steady at 2-2.5 mmol/l (total calcium adjusted 3.84 mmol/l.
- Combined continuous renal replacement therapy and careful electrolyte monitoring can be highly effective for acute reduction of elevated serum calcium levels until the bisphosphonates take effect. (2-4 days)
- Surgical intervention was sought at this stage as she had CRRT resistant hypercalcaemia.

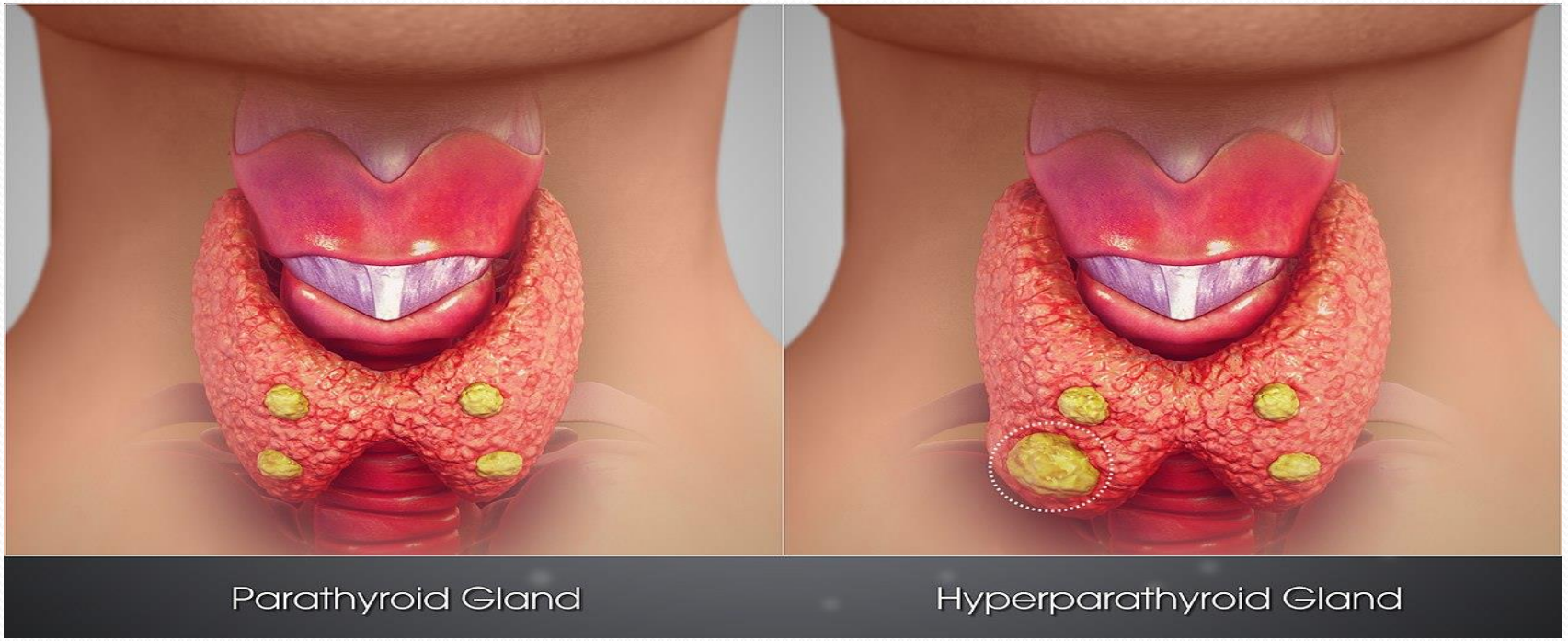
Timeline graph of ionised calcium measured with ABG analyser



- "Hypercalcaemic Crisis" evident.
- Medical emergency.
- High risk of cardiac arrythmia and consequent arrest.
- CNS is also affected putting the patient at risk of coma.

The answer…

- CT Scan of brain, thorax and abdomen : a large left sided 3cm parathyroid adenoma was identified via a Sestamibi scan.

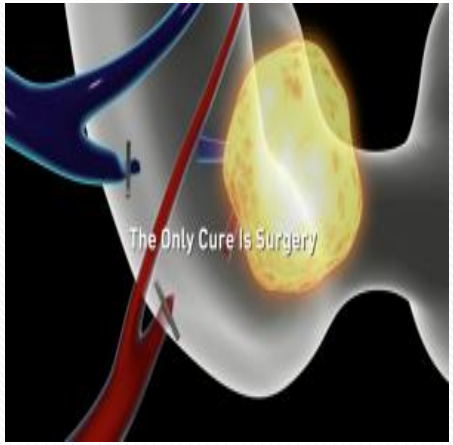


Rare Coagulation Occurrence

- Our patient had so much Calcium that it overwhelmed the anticoagulant present in the blood tube and our coagulation colleagues were unable to measure her clotting times. They have never seen this before .

Next Step…

- Patient transferred to Galway UH
- Parathyroidectomy performed



What happened in UCHG

- Surgery is performed 5 days post admission to UCHG and a 9g parathyroid adenoma is removed.
- Intraoperative PTH levels not checked due to obvious adenoma.
- Day 1 post op: PTH levels drop to 17.4 pg/ml
- Hungry bone syndrome developed as a result of the drop in PTH
- Day 3 post op: Total serum Calcium dropped to 1.99 mmol/l and her PTH levels rose to 322 pg/ml in response to her hypocalcaemia
- Day 4 post op: Ionised Calcium drops to 1.02 mmol/L
- Day 10 post op: Discharged home with a total serum calcium level of 2.12 mmol/L and a PTH of 77.3pg/ml

PTH Measurement

- PTH is measured on Roche Cobas 602
- Assay Principle is ECLIA ElectroChemiLuminescence
- Same measuring platform in SUH and GUH making interpretation for medical team easier

Overview of blood results

	ED 28/6/21	*ICU 12mn 28/6*	*ICU 12md 30/6*	*GP 22/7*
UREA	9.7 ↑	9.7 ↑	4.7	2.8
CREATININE	88 ↑	97 ↑	48	63
SODIUM	139	146 ↑	143	139
POTASSIUM	2.6 ↓	2.8 ↓	3.9	3.5
CHLORIDE	100	109 ↑	108 ↑	102
CALCIUM adj	>5.00 ↑	>5.00↑	3.84↑	2.30
PHOSPHATE	1.44	1.40	1.05	0.76
MAGNESIUM	0.79	0.71	0.93	-
TROPONIN Hs	9	203 ↑	-	-
PTH	2354 ↑	2596 ↑		265 ↑
WCC	15.12 ↑	24.58↑	9.76	4.26
CRP	15 ↑	61 ↑	177 ↑	
TSH	0.53	0.58	-	2.74
CORTISOL			2597↑	307

In Summary

- The vast majority of patients with hyperparathyroidism have calcium levels in the upper normal range or are slightly elevated. The 'intermittent normal' levels can be confusing for doctors to factor in a parathyroid tumour into their investigations.
- Also the wide range of symptoms with which patients can present with and some can be of a chronic nature can lead to delayed diagnosis.
- This case study illustrates how a patients health can rapidly deteriorate and how fortunate 'Jane' was to be in a medical setting when her life threatening episode unfolded.
- It also shows how prompt appropriate surgical treatment provides the best outcome for the patient.
- Primary hyperparathyroidism is one of the most common causes of hypercalcaemia and should be considered in any individual with an elevated calcium level.
- Primary hyperparathyroidism is the third most common endocrine disorder after diabetes and thyroid disease.

And Finally…

- Doing very well
- Full recovery post surgery with normal serum Calcium and PTH levels are slowly returning to normal.
- Resolution of all symptoms of hypercalcaemia.
- Initial post-op anaemia has since resolved.

Prescribed Vitamin D Calcium and Folic Acid.

Released from UHG into the care of the GP who has monitored calcium and PTH levels regularly post op.

Thankfully a happy ending for our patient .

Acknowledgements

- Dr Grainne O Malley Consultant Geriatrician and Associate Clinical Director SUH
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- Dr Niall Hever GP
- Dr Damien Griffin Consultant Chemical Pathologist GUH

QUESTIONS ....

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