

# Hypercalcemia with uric acid crystals

From other results it is also evident that:

|            |                   |         |                  |
|------------|-------------------|---------|------------------|
| HOSP #     |                   | WARD    | Nephritic clinic |
| CONSULTANT | Dr. Heleen Vreede | DOB/AGE | 49 y Female      |

|                            |                               |     |              |            |                          |
|----------------------------|-------------------------------|-----|--------------|------------|--------------------------|
| Episode No                 | SA02784405                    | MRN | MRN78959694  | Lab        | Groote Schuur Laboratory |
|                            | Mrs Linda MEYER               |     | F            | 49 y       | 24/06/1969               |
| Clotted blood; EDTA blood; |                               |     |              |            | Urgent                   |
| F.N.                       | 57495756                      | Alt |              | RN         |                          |
| Hos                        | Groote Schuur Hospital wc GSH |     | 021 404 9111 | Collection | 20/02/2019 14:45         |
| Wrd                        | Endocrine Clinic F58          |     | 404 5326     | Received   | 20/02/2019 16:07         |
| Doc                        | [0DR] Doctor In Charge .      |     |              | Registered | 20/02/2019 17:44         |
|                            |                               |     |              |            | ePR I Deta               |

Uric acid nephropathy with hypercalcaemia (Mrs. Linda Meyer)  
MRN78959694

## Abnormal Result

The calcium on 20/02/2019 on bloods taken 14h45 was 3.29 (2.15-2.50 mmol/L).

## Presenting Complaint

The patient presented with pain "from loin to groin" which is the typical presentation of passing a renal stone.

## History

The patient has chronic renal failure (first creatinine was 362 umol/L with eGFR of 12ml/min – MDRD) on 12 December 2017. Creatinines relatively unchanged since then.

Upon re-evaluation of the case in 2020 it was seen that the baseline creatinine has risen to ~445 umol/L indicating a worsening of the chronic renal failure eGFR now 9 ml/min – by both CKD-EPI and MDRD formulas.

# Examination

N/A

## Laboratory Investigations

The patient is known with Hyperuricemia, first result 0.50 (0.16-0.36mmol/L) on 16 February 2018. The response to treatment appears poor due to continuing rising serum uric acid levels (considering whether the patient is on allopurinol).

### 2. Regarding the hypercalcemia:

| Episode | SA04315821 | SA03552076 | SA03535628 | SA02816641 | SA02784405 | SA02622825 | SA02369770 | SA02123812 | SA01901592 |
|---------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Date    | 11/11/2020 | 11/12/2019 | 04/12/2019 | 04/03/2019 | 20/02/2019 | 12/12/2018 | 04/09/2018 | 23/05/2018 | 16/02/2018 |
| Time    | 09:44      | 10:22      | 17:03      | 15:48      | 17:44      | 17:11      | 10:31      | 16:25      | 15:28      |
| Na      |            |            | 135 L      |            | 139        | 138        | 139.000    | 138.000    | 137.000    |
| K       | 5,3 H      | 4,7        | 4,8        |            | 4,8        | 4,5        | 4.320      | 4.400      | 4.780      |
| Urea    |            |            | 17,2 H     |            | 14,3 H     | 16,2 H     | 11,3 H     | 18,8 H     | 17,1 H     |
| Creat   | 443 H      | 484 H      | 434 H      | 444 H      | 446 H      | 475 H      | 334 H      | 408 H      | 415 H      |
| MDRD    | 9          | 8          | 9          | 9          | 9          | 8          | 13         | 10         | 10         |
| CKD-EPI | 9          |            |            |            |            |            |            |            |            |
| Ca      | 2,79 H     |            | 2,59 H     | 3,09 H     | 3,29 H     | 2,97 H     | 2.820 H    | 2.850 H    | 3,12 H     |
| Mg      |            |            | 0.94       |            | 1,05       | 1.00       |            | 1.060 H    | .980       |
| Phos    |            |            | 1,02       |            | 1,25       | 1,33       | .980       | 1.240      | 1.110      |
| PTH     |            |            | 13,3 H     |            | 4,3        | 4,6        |            |            |            |

Cumulative history of UEC and CMP with PTH.

From above results a consistent hypercalcemia with a single raised PTH result can be seen – see “Final Diagnosis” and “Take Home Message” below.

## Other Investigations

Uric acid crystals were seen on the urine microscopy reflecting uric acid nephropathy – a possible cause of the chronic renal failure, but I could not find any biopsy result or alternative explanation for the renal failure and assume it is uric acid nephropathy. The patient also appears to have been for a procedure at Urology (? Renal stone removal).

A serum protein electrophoresis with immunofixation (13/09/2018) showed no monoclonal peaks.

## Final Diagnosis

Uric acid nephropathy with renal stones.

Hypercalcemia likely due to tertiary hyperparathyroidism.

## Take Home Message

Uric acid nephropathy appears to be an uncommon cause of chronic kidney disease (ref. [Up-to-date](#)).

It should however be emphasized that clinicians consider the cause on a differential, as it is a manageable cause.

Hypercalcemia sometimes occur in Chronic Kidney Disease patients due to tertiary hyperparathyroidism. This is due to persistent hyperphosphatemia with resulting hyperparathyroidism leading to hypercalcemia (as opposed to the more commonly occurring **hypocalcemia** is renal failure).

—Commentary by Nephrologist- Dr. Erika Jones—

WRT the Uric Acid

Difficult to say if it is cause or effect of CKD. We can only really make a diagnosis of uric acid nephropathy on kidney biopsy. But it is definitely a cause that we see on occasion.

The good news is that the creatinine has remained fairly stable in the last couple of years, unlike the UA, but as kidney function deteriorates it is expected the UA will increase.

According to our buff records she had staghorn calculi and that was labelled as the cause of her CKD.

Allopurinol in CKD is challenging as it accumulates with side effects. We have had two patients with full on Steven's Johnson Syndrome. So if she isn't symptomatic I wouldn't give it to her. She is recorded as having Sarcoidosis which explains the hypercalcaemia. I think this stage is too early to have tertiary hyperparathyroidism.