Rapidly decreasing Prolactin result

HOSP #		WARD	Endocrinology Clinic
CONSULTANT	John Stanfliet	DOB/AGE	36 y Female

Abnormal Result

A low prolactin result was obtained in a patient in whom a macroadenoma was suspected:

Prolactin: 1.3 mIU/L

Presenting Complaint

The patient presented with headache and decreased visual acuity (more specifically peripherally).

History

There were bilateral galactorrhoea, amenorrhoea, and as noted above, headache and visual disturbances.

The patient had received Cabergoline (a dopamine receptor agonist on D2 receptors) for the past 4 months.

Examination

As above

Laboratory Investigations

Date	**Prolactin** (mIU/L)
02/2019	106 (Recovery of 80% following PEG precipitation)

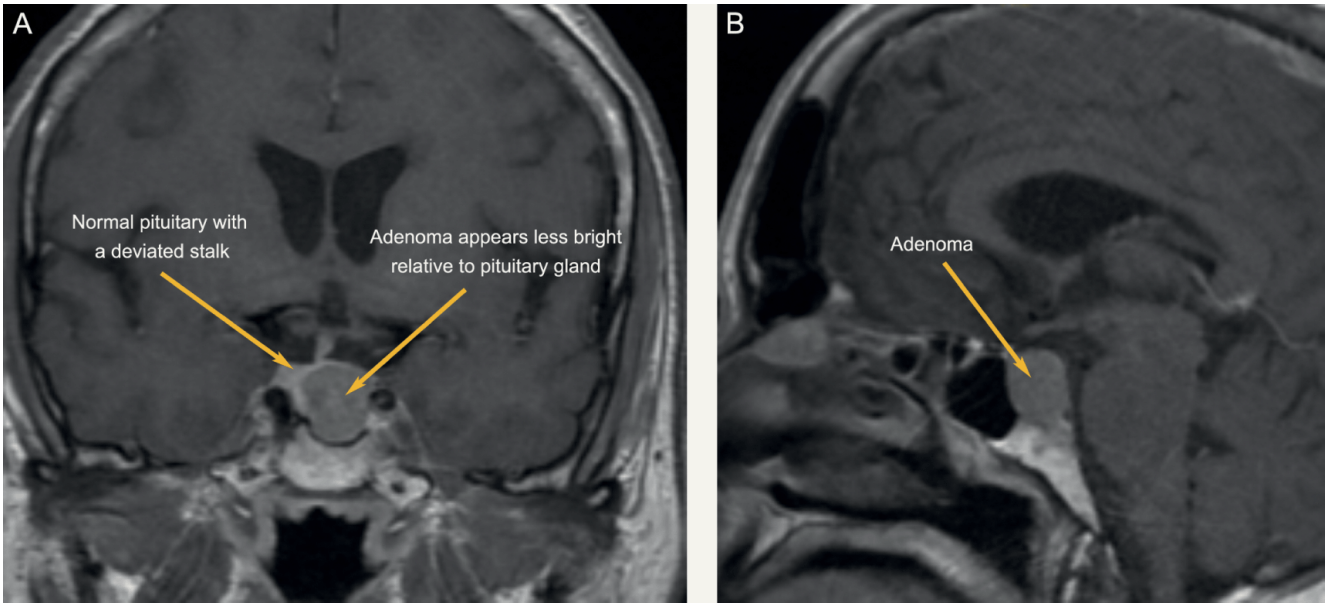
05/2019	135
06/2019	85
08/2019	1.3 (1.59 with a 1:10 dilution; 3.94 with a 1:50 dilution)

Prolactin Results

Other Investigations

MRI Head was booked for the following week. Interestingly, even in prolactin secreting tumours, the correlation between tumour size and prolactin level is limited. MRI head remains a vital investigation.

Final Diagnosis



Pituitary Macroadenoma

Take Home Message

During pregnancy the concentration of prolactin rises under the influence of elevated estrogen and progesterone production. The stimulating action of prolactin on the mammary gland leads post partum to lactation. Hyperprolactinemia (in men and women) is the main cause of fertility disorders. The

determination of prolactin is utilized in the diagnosis of anovular cycles, hyperprolactinemic amenorrhea and galactorrhea, gynecomastia and azoo-spermia. Prolactin is also determined when breast cancer and pituitary tumors are suspected. As in this case, a pituitary tumour was suspected, hence the repeated prolactin results.

As was noted in another short case, our assay on the Roche platform does measure all forms of prolactin, and when a high result is obtained (above the gender-specific reference range) it is recommended to measure the recovery after PEG precipitation.

Roche Prolactin Package Insert (2013)Download
Clin-Biochem-Rev-2018_Prolactin-Biology-and-Lab-MeasurementDownload
Clin-Chem-2008-Macroprolactin-Reference Intervals-after-PEGDownload

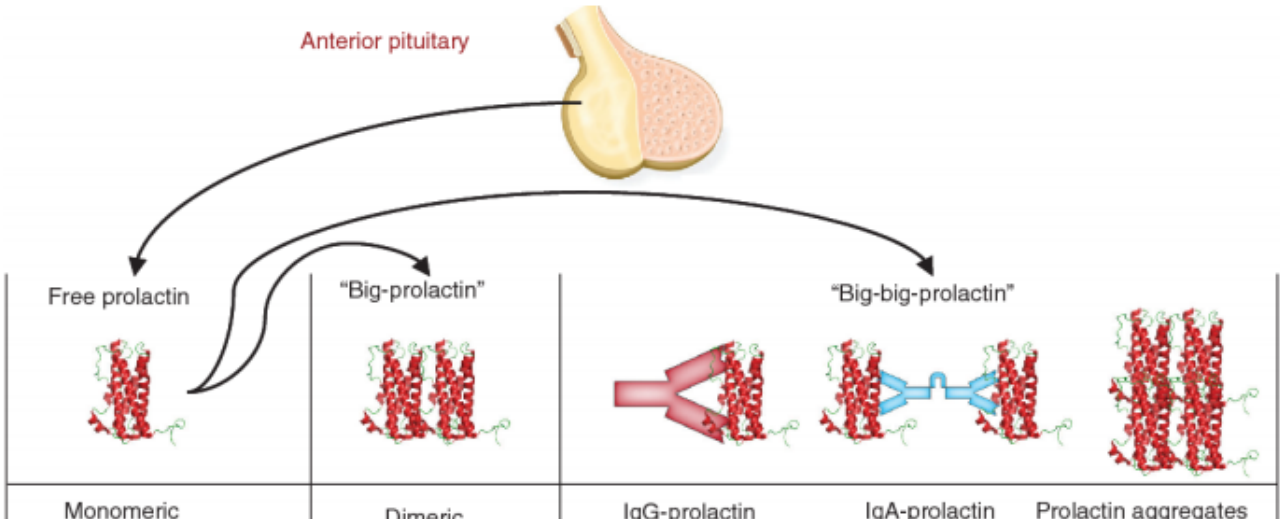


Figure 1. Structure of monomeric prolactin, "big-prolactin" and "big-big prolactin". Figure 1 adapted from reference 9 with permission.

Figure 1

Dr. John Stanfliet (pathologist at Pathcare) repied to the above case with very valuable comments:

- We use Beckman Coulter DxI, an immunoassay that is not

affected by macroprolactin (I've include an article that shows this).

- Even in prolactin secreting tumours, the correlation between tumour size and prolactin level is limited. MRI head remains a vital investigation.
- Some prolactin secreting tumours also secrete other pituitary hormones such as growth hormone.
- I would ascribe the reduction in PRL to the Carbegoline and wonder whether the dose has been increased.
- Dr. Pete Berman would often suggest a mixing study: find a sample with high PRL, mix it 50/50 with this sample, and measure it to see whether there is some interferant in this sample.

The-Beckman-DxI-800-prolactin-assay-demonstrates-superior-specificity-for-monomeric-prolactinDownload

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A possible case of glycerokinase deficiency

HOSP #		**WARD**	Ward B2
CONSULTANT	George van der Watt	**DOB/AGE**	3 month

Abnormal Result

Glycerol which is significantly raised on urine organic acid analysis.

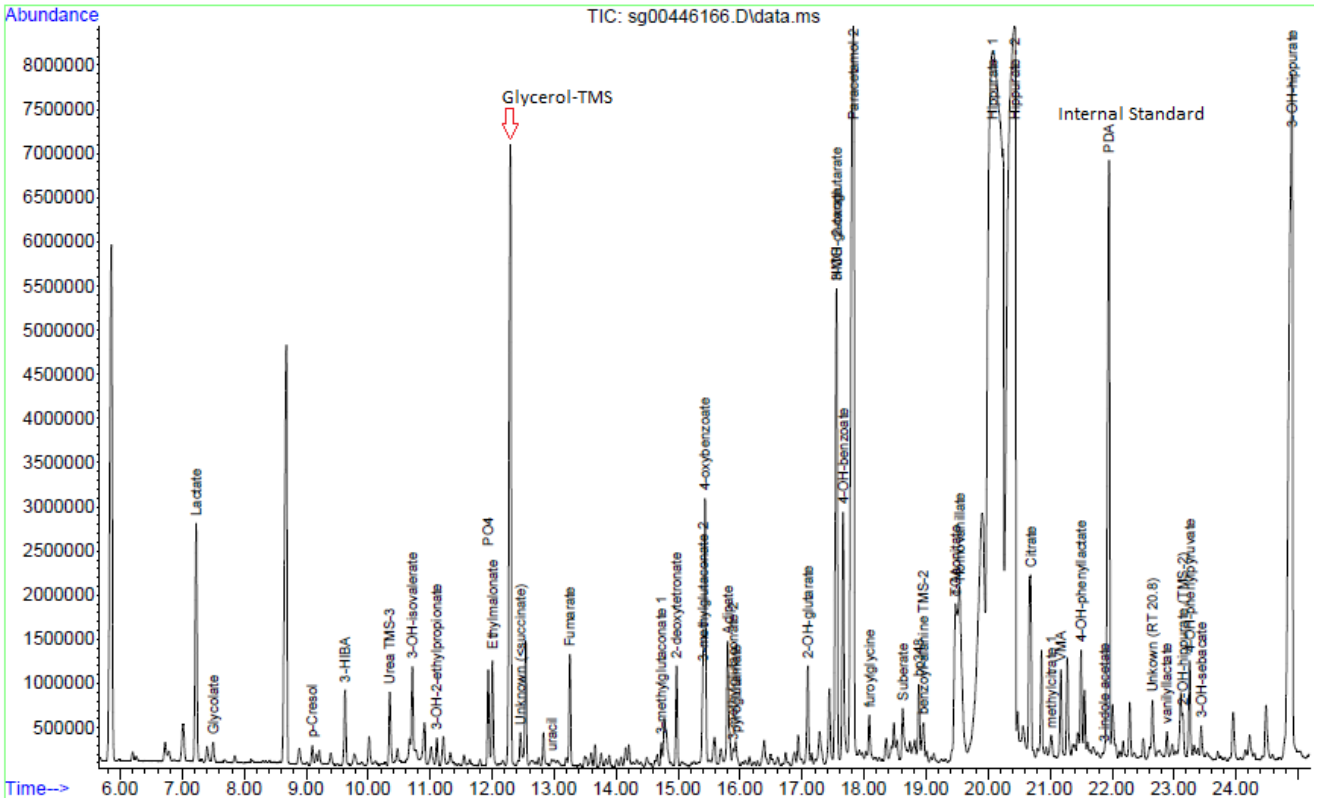

Figure 1 – Chromatogram. The high levels of Glycerol (with TMS – trimethyl silyl derivative) which is >0.5 the peak height of the internal standard (PCA – pentadecanoic acid).

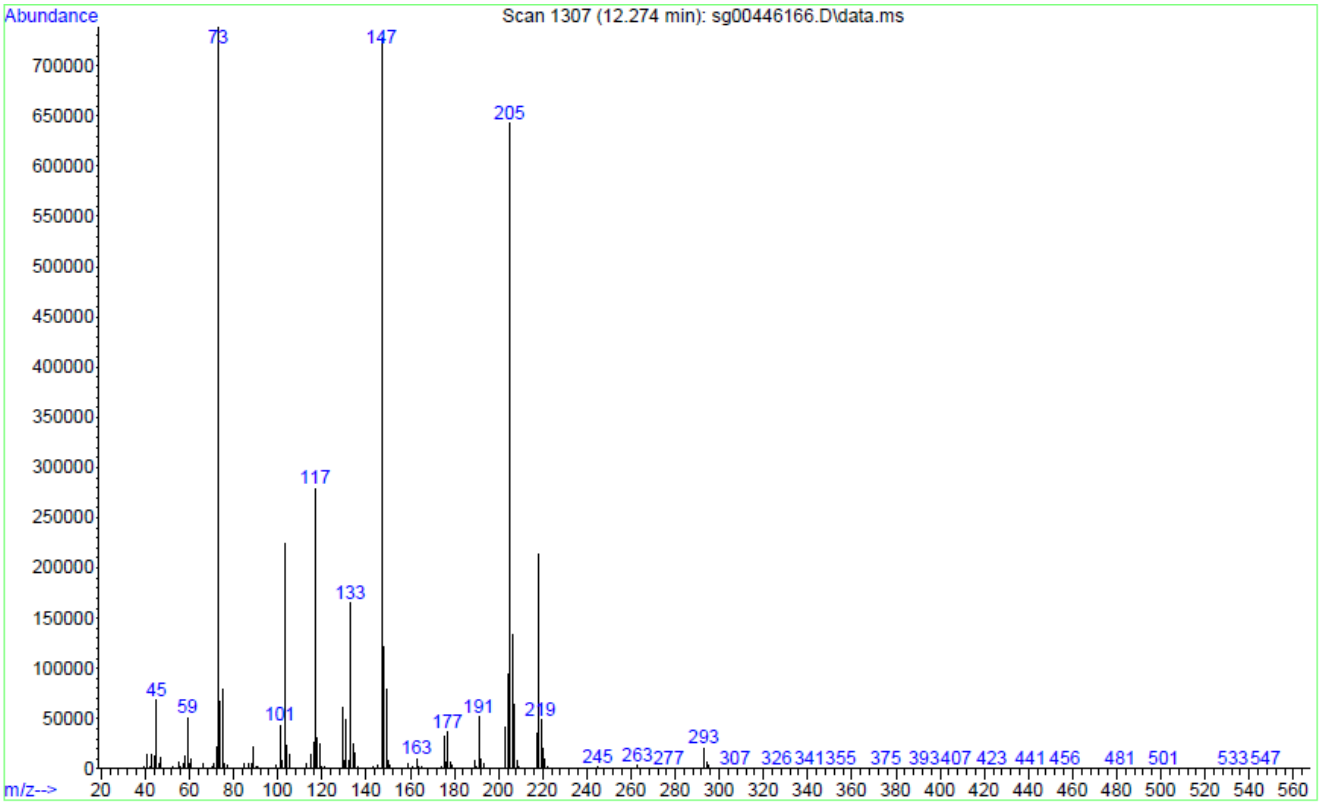

Figure 2 – Mass spectrum of the peak as indicated by Glycerol TMS above in Figure 1.

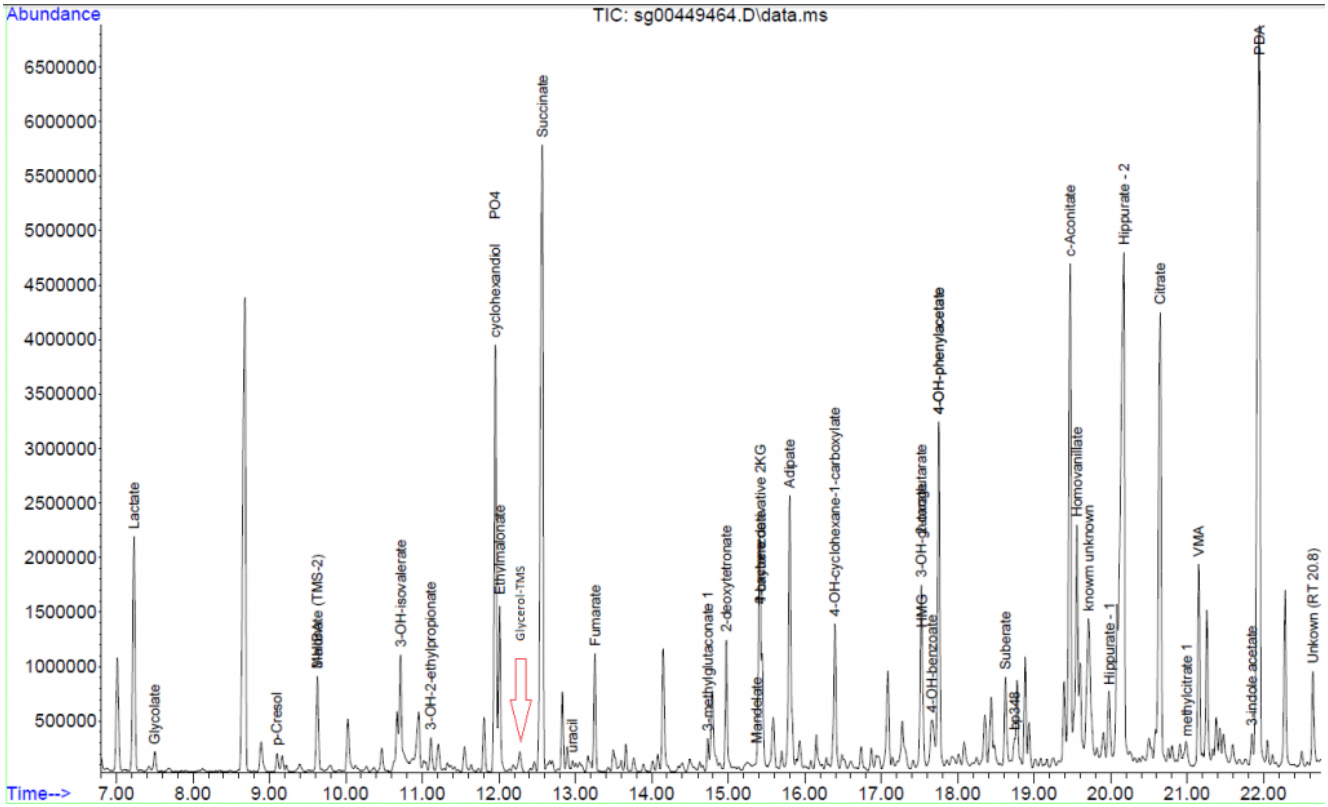

Figure 3 – Follow up gas chromatogram without KY-jelly

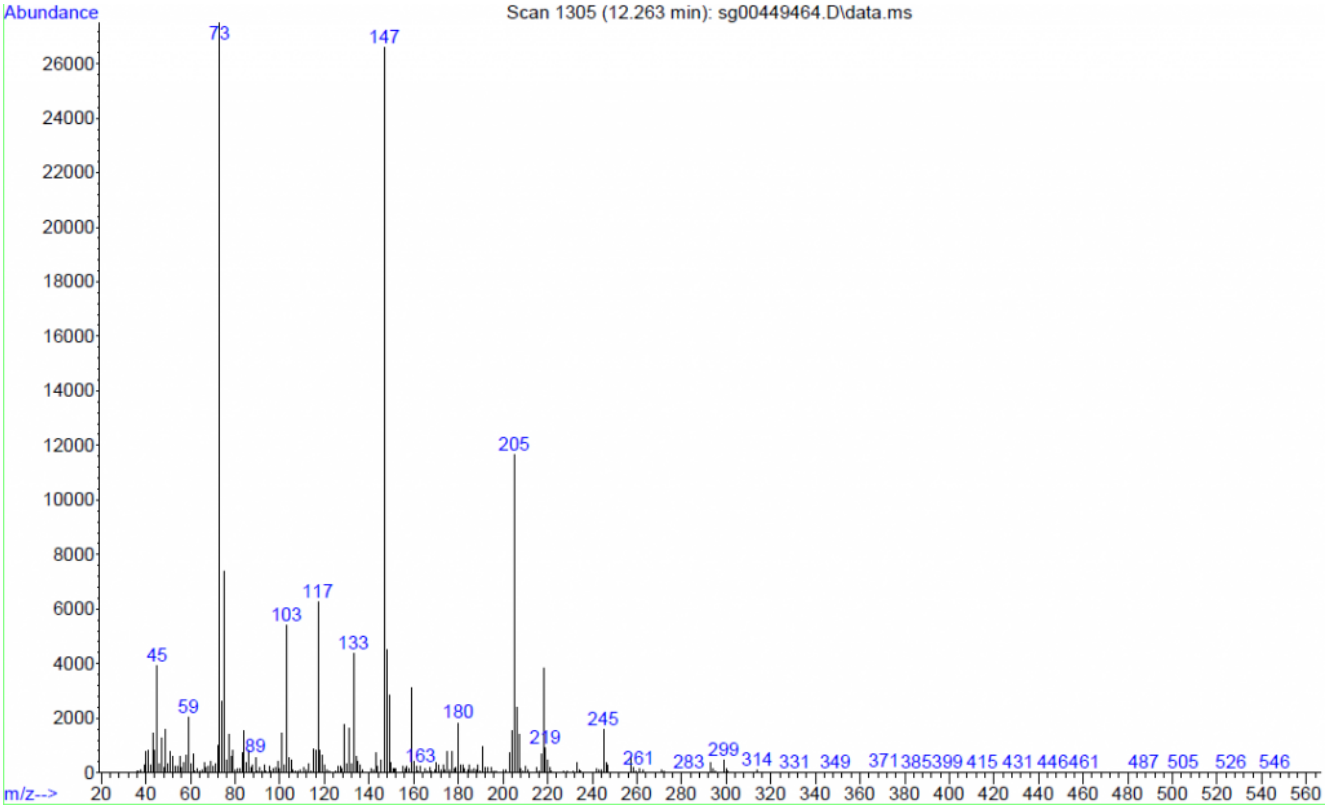

Figure 4 – Mass spectrum in the peak marked as “Glycerol-TMS” from figure 3.

Presenting Complaint

Patient is a 3 month old male with signs and symptoms of sepsis.

History

Patient presented with significant failure to thrive.

Laboratory Investigations

Triglycerides : 4.47 mmol/L

Other Investigations

Faecal elastase 81 ug/g stool

Reference range (adults and children > 1 month):

- > 200 ug elastase/g stool: Normal exocrine pancreatic function
- 100-200 ug elastase/g stool: Moderate/mild pancreatic insufficiency
- < 100 ug elastase/g stool: Severe exocrine pancreatic insufficiency

These ranges apply to formed stool samples. Watery stool samples may yield spuriously low elastase results due to dilution, and a formed stool sample should be sent for re-analysis.

Final Diagnosis

Glycerol contamination of the skin – as excluded by the repeat analysis.

Take Home Message

- Glycerol (glycerine) is a common contaminant of urine organic acids due to being present in various skin products / creams. Contamination can be eliminated by thorough cleaning of the perineum with normal saline or doing an “in-out” catheterization procedure for urine collection in neonates. Interestingly glycerol is also one of the main ingredients in KY jelly, a common lubricant use for catheterization.
- High glycerol in serum will present with a falsely high triglyceride level on most routine chemistry analysers due to the inherent enzymatic conversion of triglycerides to glycerol before further steps to measurement.

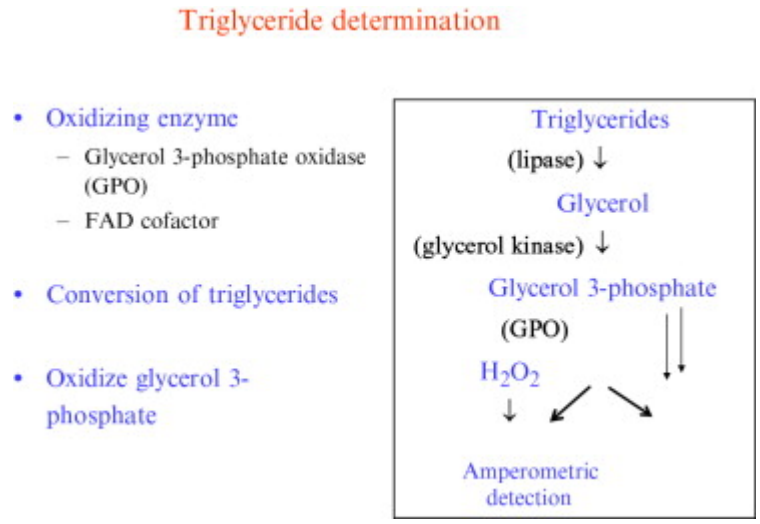

Figure 3 – Explanation of triglyceride determination by amperometric detection.

- Sepsis is more common than inherited metabolic diseases and so is pre-analytical caveats such as glycerol contamination of the perineal skin.