CLINICAL BIOCHEMIST NEWSLETTER

ADVICE TO AUTHORS of Omniscience Cases

When submitting your article please follow these guidelines

- Please use the Template below for formatting your case
- The case may include images, photos, graphs, tables or drawings. This will fill 1 page of the finished publication
- It is better not to embed graphs and photographs in the document as this may cause loss of resolution. Rather submit them as separate files together with original prints. You can suggest 3-5 further readings such as recent publications.
- Graphs should be submitted as Microsoft Excel files, or supply a laser print at A4 size
- Photographs should be submitted as originals or on disk preferably as an EPS, TIF or JPG file at a resolution of 300dpi (others can be used eg WMF or BMP but may cause loss of resolution)
- Spelling convention used is BRITISH spelling (not US) e.g. italicise NOT italicize; foetal NOT fetal; anaemia NOT anemia.
- References should follow the journal style in the body of the text – superscripts appear not at the site of the reference, and to appear after a comma or full stop.
- Reference formatting is as follows:

  Standard journal article

  Gaw A, Hobbs HH. Molecular genetics of lipoprotein (a): new pieces to the puzzle. Curr Opin Lipidol 1994; 5:149-55.
  List all authors when six or fewer; when seven or more, list only first six and add et al.

  More than six authors:

  Rose ME, Huerbin MB, Melick J, add 3 more authors et al. Regulation of interstitial excitatory amino acid concentrations after cortical contusion injury. Brain Res 2002; 935:40-6.

  Chapter in a book

  Lai MMC, Holmes KV. Coronaviridae: the viruses and their replication. In: Knipe DM,. Howley PM editors. Fields Virology (4th ed), Lippincott Williams and Wilkins, Philadelphia; 2001. p 1163-86.

  Conference proceedings

  Johnston, A, David, OJ, Cooney, GF. Pharmacokinetic validation of Neoral absorption profiling. Transplant Proc 2000;32 (suppl 3A):53S-56S.

  Abstract

  Levy GA, Lake JR, Beauregard-Zollinger L, Prestele H. Improved clinical outcomes for liver transplant recipients using cyclosporine blood level monitoring based on two-hour post-dose levels (abstract). Transplantation 2000;69 (Suppl):S387.

  Homepage/Web site

  Centers for Disease Control and Prevention. In the absence of SARS-CoV transmission worldwide: guidance for surveillance, clinical and laboratory evaluation, and reporting version 2. http://www.cdc.gov/ncidod/sars/guidance/index.htm (accessed 21 January 2004)

  Personal communications and unpublished papers are not acceptable citations in the References. Indicate appropriately in text in parentheses: for example, (Smith RX, personal communication) or (Smith RX, Cancer therapy. Presented at Third Annual Meeting of Medical Society, June 10, 1993 Sydney). Documentation to support such "references" must be provided to the Editor.

Completed Omniscience Cases should be sent to:

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Case History

The referring clinician queried unusual renal function test results in a 51-year old female. The serum biochemistry results were:

Analyte	Result	Reference Interval
Sodium	137 mmol/L	135 – 145
Potassium	4.0 mmol/L	3.5 – 5.0
Chloride	108 mmol/L	95 – 108
Bicarbonate	24 mmol/L	23 – 32
Urea	1.6 mmol/L	3.5 – 7.5
Urate	0.23 mmol/L	0.15 – 0.40
Creatinine	<10 µmol/L	40 – 120
Total Protein	43 g/L	63 – 80
Albumin	24 g/L	35 – 50
Total Bilirubin	15 µmol/L	3 – 20

Questions

1. What possibilities could you offer to explain the creatinine result?
2. What further information would you seek?
3. Are there any other tests you might perform to clarify the likely cause of the low creatinine result?

Discussion

Question 1

About two percent of body creatine and creatine phosphate are converted to the waste product creatinine each day.

Creatinine production in an individual is relatively constant, being directly proportional to body muscle mass. Creatinine clearance is a useful indicator of the glomerular filtration rate because very little creatinine is reabsorbed or secreted. Creatinine appearing in the urine is effectively the total amount filtered at the glomerulus.

Likely causes of a low serum creatinine include:

- Low production (e.g. decreased muscle mass)
- Methodological (e.g. sampling error, interference).

Alkaline picrate methodologies tend to suffer positive interference from a number of substances.

Enzymatic creatinine methodologies with Trinder detection reactions can suffer negative interferences from very high ascorbate levels, or certain drugs.

Question 2

Any unexpected parameter should be reviewed in light of previous results and the known clinical state of the patient.

The serum creatinine in this patient was <10 µmol/L on at least one previous occasion. Testing was performed on a Hitachi 747 (alkaline picrate methodology) and subsequently checked on a Vitros 250 (dry slide enzymatic methodology).

The extremely low body and muscle mass seems the most likely explanation for the low creatinine result. The patient was hospitalised at this time. The low urea result may be due to reduced protein intake.

Question 3

A 24hr urine collection for creatinine and protein was performed:

U-Volume	2.35 L/24h	(0.50 – 2.00)
U-Creatinine	0.7 mmol/24h	(5.3 – 16.0)
U-Protein	<0.05 g/24h	(<0.15)

The extremely low creatinine result is consistent with negligible production and excretion of creatinine.

References

1. List