Title: Dialysis Disequilibrium Syndrome: Brain death following hemodialysis for metabolic acidosis and acute renal failure - A case report.

Authors:

Sean M Bagshaw (smbagsha@ucalgary.ca)
Adam D Peets (adpeets@ucalgary.ca)
Morad Hameed (morad.hameed@calgaryhealthregion.ca)
Paul JE Boiteau (paul.boiteau@calgaryhealthregion.ca)
Kevin B Laupland (kevin.laupland@calgaryhealthregion.ca)
Christopher J Doig (cdoig@ucalgary.ca)

Version: 2 Date: 16 August 2004

Author's response to reviews: see over
Biomed Central Nephrology

August 14, 2004

Dear Editors:

Regarding: MS: 1865654290378350 - Dialysis Disequilibrium Syndrome: Brain death following hemodialysis for metabolic acidosis and acute renal failure - A case report.

Thank you for giving us the opportunity to resubmit this manuscript. We have revised the manuscript in accordance with the reviewer’s thoughtful comments that were provided in your letter dated August 10, 2004. Below, we provide an itemized summary of the changes made to the paper. Reviewer comments are in bold, followed by our responses. You will see that we have responded to each of the reviewer’s comments that were provided.

Reviewer 1 (Cornelius J. Doorenbos).

Can the authors explain why the potassium decreased from 3.1 to 1.8 mmol/L during dialysis with a dialysate potassium of 3 mmol/L? Why was the potassium low in the first place, considering the severe acidosis and renal failure?

The reviewer has raised an interesting question. The hypokalemia is most likely attributed to a total body depletion of potassium in this patient principally due chronic obstructive nephropathy and chronic pyelonephritis. Poor intake, malnutrition, and hypomagnesemia may have contributed. The acidemia likely resulted in an extracellular shift. The ensuing correction of the acidemia with hemodialysis promoted the intracellular shift of potassium and resulted in marked hypokalemia. (Wiegand, CF et al, Arch Internal Med 1981;141:167-170)

There are no numbers in the text referring to the references. The appropriate text references have been added.

On page 2, the bicarbonate could be mentioned immediately after the PaCO2 instead of after the sodium. This has been changed.

The osmolality is measured in mosmol/kg not mmol/kg. This has been changed.

The manuscript might benefit from an expanded Table 1. Table 1 has been expanded to include both immediate pre-dialysis and post-dialysis laboratory values.

On page 5, what was the volume and the concentration of the administered bicarbonate? What was the effect on the acidosis?

The patient received a bolus followed by a normal sodium bicarbonate infusion with no significant change in the acidemia. This has been included and is provided in detail in the text on page 5, paragraph 3.
Because the patient has a urethral meatus stenosis on page 4 and bilateral hydronephrosis was seen on the CT scan on page 5, probably a bladder catheter was placed and that might be mentioned in the text.
The patient in fact had a suprapubic catheter inserted. This has been included on page 5, paragraph 3.

Was the employed femoral catheter single or double lumen?
The femoral Uldall dialysis catheter was double-lumen. This has been updated.

What was the ultrafiltration rate during dialysis?
The patient had 71.5 L of blood processed over four hours with no fluid removal. The text has been updated on page 5, paragraph 3.

On page 5, what was the duration of the dialysis treatment?
The patient received 4 hours of dialysis. This has been added to the text on page 5, paragraph 3.

On page 10, please check the spelling of disequilibrium in reference 2,3 and 13.
This has been corrected.

On page 2, the diagnosis of pneumonia is mentioned. In view of the results of the cultures of blood and urine on page 5, the patient seems to have had urosepsis. At autopsy on page 6, the kidneys were pyonephrotic, but the lungs are not mentioned at all.
This patient had multiple foci for potential sepsis. At autopsy, this patient had evidence of acute bronchopneumonia and acute on chronic pyelonephritis. On page 6, paragraph 3 this has been clarified.

What is the meaning of the fact, that the leucocytes in the urine were reported on page 5 as being large?
Large leucocytes in the urine represents microscopy evidence of more than 30 leucocytes per high power field and suggestive of pyuria. This has been clarified in the text on page 5, paragraph 1.

On page 5, which empiric antimicrobials were started?
The patient was started empirically on ceftriaxone, metronidazole and vancomycin. This has been added to the text page 5, paragraph 2.

Could the authors describe the expertise of Dr. Bruce Culleton?
Dr. Culleton is a nephrologist and clinical epidemiologist with the Division of Nephrology in the Department of Medicine at the University of Calgary. We have updated the acknowledgement accordingly.

We greatly thank the reviewer for their appraisal and thoughtful comments. We recognize that the paper has improved through the requested revisions, and hope that the editors will be satisfied with our revisions.

Finally, during the submission process, it came to our attention that the University of Calgary is in fact an affiliate member of Biomed Central and that we may qualify for an institutional waiver on the processing fee. We look forward to hearing from you.

Yours sincerely,

Sean M. Bagshaw, MD
Adam D Peets MD
Morad Hameed MD MSc
Paul JE Boiteau MD
Kevin B Laupland MD MSc
Christopher J Doig MD MSc