

What Happens to Acute Stroke Patients' Fluid Balance, Renal Status and Dehydration in the First Two Weeks: How Can They Be Markedly Improved ?

Introduction:

Precise patterns of acute stroke patients' fluid balance, renal function and dehydration in a modern Acute Stroke Unit were unknown until our presentation (UKSF 2014, shortlisted for prize). Biochemical markers of hydration and renal function were significantly increased on every consecutive day during the first week, remaining increased at two weeks [$p < 0.02$], reflecting inadequate net fluid balance. In 2015 we introduced numerous new additional measures aiming to correct this.

Method:

The following were prospectively audited for new acute stroke patients ($n=60$) in 2015: total fluid input and output, net fluid input, plasma urea:creatinine ratio, urea:baseline urea and eGFR. Many were analysed on an almost daily basis for the first two weeks after admission.

Results:

In 2014, markers of hydration and renal function including mean urea:creatinine ratio and urea were significantly increased on every consecutive day during the first week, remaining increased at two weeks [$p < 0.02$]. Net average daily Fluid Balance was often negative, despite repeated evidence of significant dehydration. There was biochemical evidence for risk of pre-renal Acute Kidney Injury (AKI).

In 2015, new additional measures were introduced aiming to correct the 2014 aberrations. There were statistically significant improvements in fluid balance each day in the first week, and extirpation of biochemical evidence of dehydration or AKI.

Conclusion:

In 2014, adequate hydration, known to be important for stroke recovery and wellbeing, was not being achieved. In addition there was persistent daily evidence of potential AKI. In 2015 new measures effectively corrected the shortfall in net fluid input and eliminated biochemical evidence of dehydration and risk of renal damage. We will explain the new measures that achieved this significant improvement.