EXCEPTIONS TO THE PARADIGMS OF FRACTIONAL EXCRETION OF UREA IN THE DIFFERENTIAL DIAGNOSIS OF ACUTE RENAL FAILURE.

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Fractional excretion of urea (FeUN) less than 35% has been found to be more sensitive and specific index than fractional excretion of sodium in differentiating between ARF due to pre renal azotemia(PR) and that due to ATN, especially if diuretics are administered.

The objective of this study is to see if exceptions apply to the rule of FeUN less than 35% in situations of steroid use (with increased urea generation), chronic kidney disease (with single nephron GFR adaptation to nephron loss) and cardiorenal syndrome (CR).

We did an observational prospective study of 52 patients (pts). They were divided into six groups; PR on CKD, ATN on CKD, PR alone, ATN alone, PR with steroid use & CR with ATN. ARF is defined as a rise in serum Cr > 0.3mg/dl from baseline or urine output <0.5ml/kg/hr for >6hours. Study population was taken from nephrology consult services at CCF. Steroid use was considered use of prednisone > 10mg or equivalent. AIN, obstructive uropathy, GN and transplant pts were excluded. The proportions of patients with FeUN < 35% were compared between two relevant groups using z-test for two proportions.

Eight (62%±25%) out of 13 PR on CKD pts and 1 (17%±29%) out of 6 ATN on CKD pts had FeUN <35% with no significant difference, P=0.17. However when PR on CKD group was stratified into CKD stages, it was statistically significant for CKD III pts (7/9,78%±28% having FeUN <35%) compared with ATN on CKD pts, P=0.01. Similarly comparing PR on CKD IV pts with ATN on CKD pts, 75%±25% vs 88%±12% had FeUN >35% respectively, P=0.37.Six of 9 ATN alone pts (67%±31%) and 4 out of 5 (80%±35%) in PR with steroid pts had FeUN >35%, P=0.38. In CR with ATN group, 8/10 (80%±25%) had FeUN <35%. Comparing, this group with PR alone pts (78%±28% with FeUN <35%) yields no significant difference, P = 0.45.

FeUN cannot be used to differentiate pre renal azotemia from ATN in pts on high dose steroid, CKD stage IV and cardiorenal syndrome but can be use in CKD stage III. Larger sample size studies are needed to verify this conclusion.