CONVERSION OF THE CATABOLIC PHASE INTO AN ANABOLIC PHASE DURING
THE POSTANURIC STATE

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The purpose of this paper is to show that in the early polyuric stage of a postanuric state, the
conversion of a catabolic phase into an anabolic phase may occur. This conversion occurred
without change in dietetics.

F. K., 8, 58 years, Chron. Pyelonephritis

Fig. 1
CONVERSION OF CATABOLIC INTO ANABOLIC PHASE DURING THE POSTANURIC STATE

Method

The data are from the case of a 58-year-old woman with an acute exacerbation of chronic pyelonephritis which required the use of peritoneal dialysis during the anuric state.

Urea-N and creatinine levels in plasma were measured daily as well as their clearances. Assuming that the total body water (TBW) represents 60% of body weight, we calculated the total body content of urea-N and creatinine (P × TBW). The production per day of urea-N and creatinine was estimated as the difference between the total amount excreted in urine minus the product of the difference of daily consecutive plasma concentration by TBW (U × V) - (ΔP × TBW).

Creatinine was determined by a modification of Popper's method (Schirmeister et al., 1963) and urea-N by the ureasecolorimetric method described by Fawcett et al. (1960).

Results and comment

The data show that in the early part of the polyuric stage there was a fall of plasma creatinine without a simultaneous fall of plasma urea-N (Fig. 1-B). Such a discrepancy was noted in cases of so-called extrarenal azotaemia (Gaberma et al., 1950) and was explained by the fact that urea is excreted by glomerular filtration and tubular reabsorption while creatinine may be excreted by both filtration and tubular secretion. Actually, the decrease of plasma

![Graph 1: Total Body Content of Urea-N and Creatinine](image)

![Graph 2: Production per day of Urea-N and Creatinine](image)

P: Concentration of Urea-N or Creatinine in Plasma
U: Concentration of Urea-N or Creatinine in Urine
V: Urine volume in 24 hours
ΔP: Difference of daily consecutive P
T.B.W.: Total Body Water

Fig. 2

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creatine results from an increasing creatinine clearance; but this increase is not due to
tubular secretion of creatinine as indicated by the normal value of the urea-creatinine
clearance ratio (Fig. 1-C). The increasing creatinine clearance represents in fact a rise of
glomerular filtration rate (GFR).

Merill (1965) has recently suggested that the continuing increase of serum NPN in such a
case may result in some degree of concentration of solute in the plasma by preferential water
loss (hypotonic urine). If there was really a reduction in plasma volume the plasma creatinine
should increase too, since urea and creatinine have the same distribution space (Edwards,
1959; Schloerb, 1960).

Since there was at no time during the illness a reduction of the urea-creatinine clearance
ratio (Fig. 1-C), the persistent high urea-N could not come from an increase in urea back
diffusion by increased permeability of tubular cells to urea.

In fact the persistent high urea-N is due to a relative overproduction of urea and conse-
quently the rise of GFR fails to clear extracellular fluid of daily metabolism load.

On the other hand, the decrease of urea-N takes place during a stage where the clearance
of urea and creatinine is not increasing; therefore this decrease is not due to a further im-
provement of renal function but it is the consequence of anabolic processes resulting in a fall
of urea production (Fig. 2).

**Conclusion**

1. The improvement of renal function in the early polyuric stage was sufficient to decrease
plasma creatinine. Plasma urea-N did not decrease because of a relative overproduction of
urea.

2. The plasma urea-N and the urea excretion decrease simultaneously, which means that
the catabolic phase was converted into an anabolic phase.

**REFERENCES**

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