

Uroinfection in Elderly Patients with Chronic Renal Failure

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Introduction

Patients with chronic renal failure (CRF) are quite vulnerable and deteriorate quickly under the influence of different renal and extrarenal factors. They have a decreased renal mass and rather kidneys cannot respond to the high demands with adequate adaptation mechanism. It's typical especially for elderly patients whom renal function decreases with age.

In 25% of patients with advanced CRF the reason for sudden deterioration is the previously damaged renal function (G. Ackerman and W. Flanigan). After an adequate treatment, azotemia returns to initial values ("reversible" CRF). In this case there is an abrupt declination of the clinical status of patients with CRF and elevation of azotemia with or without changes in diuresis. In most cases it's in relation with extrarenal factors, leading to a decrease of renal blood flow or because of renal diseases - active chronic pyelonephritis, obstructive uropathy or toxic damages of the kidneys by drugs or toxins.

Aim of the Study

The aim of this study is to evaluate the role of uroinfection in renal diseases with chronic renal failure (CRF) and the share of reversible CRF after treatment in elderly people in NorthEastern Bulgaria (Varna region) for a long period of time.

Patients and Methods

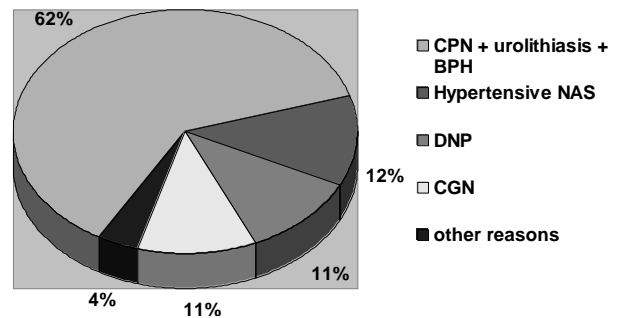
We examined 153 patients with CRF out of 564 elderly patients, mean age $70,8 \pm 4,8$ years, 110 males and 43 females, treated ambulatory and in the Clinic of Nephrology, Medical University, Varna when their status was worse. The period for investigation was 4 years. Eighteen of them were with reversible CRF. We analysed the reasons, leading to deterioration of renal functions. We followed and evaluated statistically the levels of urea and creatinin before and after treatment.

Results and Discussion

During the period 1998-2002 in some ambulatory practices and mainly in the Clinic of Nephrology 153 patients over 65 years with different stage of CRF have been treated. The most common reasons, leading to CRF in this age were chronic pyelonephritis (PN), together with urolithiasis and/or benign prostatic hypertrophy (BPH) - 62%. Next is hypertensive nephroangiosclerosis (NAS) - 12% and diabetic nephropathy (DNP) - 11%. More rare are chronic glomerulonephritis (GN) - 4% and other reasons, including

analgesic nephropathy, amiloidosis and myeloma kidney (fig.1).

Figure 1. Causes for CRF in elderly patients over 65 years



Causes for CRF in elderly patients differ significantly from these in young patients where chronic GN is the most important reason for CRF. In elderly people the primary renal diseases decrease, while cases with secondary renal damages increase, accompanying metabolic and neoplastic diseases - amyloidosis, myeloma kidney (De Vita et al, 1995). According to T.Edward and I.Zawada (1983) in old persons with CRF PN, urolithiasis and postrenal reasons are the most common. These diseases are related and this fact explains the high frequency of obstructive uropathy in elderly patients with CRF.

In 18 of the patients (14 male and 4 female, mean age $72,2 \pm 5,7$) after an adequate treatment we established a prompt improvement of the status and significant decrease of plasma urea and creatinin levels (fig.2).

The main diseases leading to CRF in the examined patients are shown on the table 1:

Table 1. Most common diseases leading to CRF in the studied patients

No	DISEASES	NO OF PATIENTS:
1.	BPH AND CHRONIC PN	9
2.	UROLITHIASIS WITH BPH AND CHRONIC PN	4
3.	UROLITHIASIS AND CHRONIC PN	4
4.	POLYCYSTIC RENAL DISESE AND CHRONIC PN	1

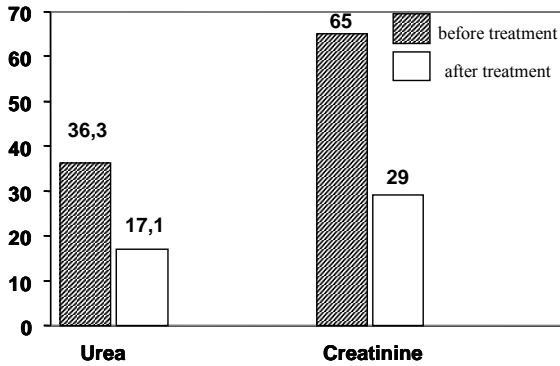
In almost all patients there are several unfavorable reasons simultaneously, influencing upon the renal function in different ways, but the final result is the same - aggravating

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the latent CRF. The reasons leading to acute deterioration of azotemia in our patients are shown on fig.3:

Figure 2. Plasma urea and creatinine levels before and after treatment of patients with aggravated CRF

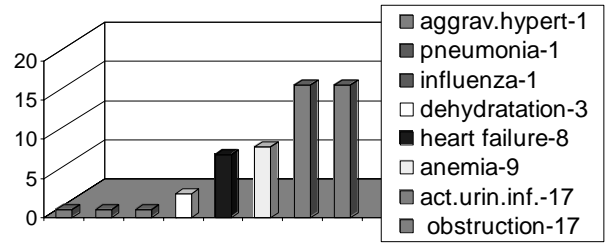


The obstruction was mainly extrarenal - distal from enlarged prostatic gland and usually is accompanied with bilateral hydronephrosis. Six of the patients had retention of the urine and a catheter was introduced. In one patient an urgent percutaneous nephrostomy was made, because of stone obstruction in a single functioning kidney. The aggravation of concomitant chronic PN was clinically showing 4 of the patients while the other patient had only changes in the urine sediment and significant bacteriuria (*E.coli*, *Pseudomonas aeruginosa*, *Proteus vulgaris*, *Proteus mirabilis* in 4 patients). In one woman *Proteus mirabilis* was proven on blood cultures also.

Infections lead to aggravation of obstruction and to declination of the functioning renal mass (M.First and M.Ettenger). Common infections may also abruptly deteriorate the renal function because of hypercatabolism. In 2 patients the latter were the reasons for aggravation of CRF. Heart failure was proved and treated in 8 patients, but in one female it was the only reason for deterioration of her status. This age group is characterized also with more frequent cardiovascular and brain-vascular diseases (in 8 of the patients).

Untreated hypertension is known to have unfavorable influence on the glomerular filtration (G.Schreiner). In one of our patients it led to deterioration of renal function in combination with acute uroinfection and obstruction.

Figure 3. Reasons for acute deterioration of CRF in the studied patients



Patients with CRF are very vulnerable to acute changes in the volume of the body fluids. Elderly people with CRF have more complex physical reaction to sodium and water. In 3 of our patients the elevation of azotemia was accompanied with oliguria or we found signs of dehydration. In 11 patients we revealed heavily decompensated metabolic acidosis and in 4 of them hyperpotassiemia too, which were due to abrupt deterioration of the renal function. The treatment was directed first to exclude the causes, leading to deterioration of azotemia: drainage of the urine (by catheter or percutaneous nephrostomy) and treatment of uroinfection with suitable uroantiseptic in adequate doses. In one patient 3 assistant hemodialysis were made. Concomitant treatment included cardiotonics, correction of water-electrolyte and acid-base balance.

Conclusions

1. In 12% of elderly patients over 65 years with CRF the latter is actually aggravated CRF. The adequate treatment leads to considerable improvement of the renal function.
2. The most common reasons in these cases are obstructive uropathy - distal type and active uroinfection, heart failure, anemia and dehydration.
3. In most cases there is a combination of several unfavourable factors.

References

1. Ackerman G et al. Reversible insufficiency in chronic renal failure. JAMA, 1966, vol. 197, 10; 749 - 753
2. De Vita et al. Predialysis management of chronic renal failure in the geriatric nephrology patients. Geriatr Nephrol Urol, 1995, vol. 5; 29-40
3. Edward T and Zawada I. The aging kidney. In: Textbook of Nephrology, Williams and Wilkins Co, Massry S, Glascock R (Ed), Baltimore, 1983; 996-1003
4. First M. Acute deterioration in patients with preexisting renal insufficiency. Arch Int Med, 1984, vol.144, 11; 2233-2238
5. Schreiner G. Prevention of renal disease and conservation of renal function. Am J Kidney Dis, 1990, vol.16, 4; 360-366.