Mycotic Urinary Tract Infection in Pyelonephritic Patients

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Frequency of funguria

We investigated 374 patients with chronic pyelonephritis. The diagnosis was confirmed by morphological signs (excretion urography), functional deterioration (concentration test, PAH and inulin clearances) and signs of activity (leucocyturia) bacteriuria. Two hundred and four patients had a non-obstructive form (NCP), 170 patients suffered from obstructive chronic pyelonephritis (OCP). Out of 204 patients with NCP, 16 (7.8%) showed funguria. Repeated cultures were positive in 10 patients (4.9%).

Out of 170 patients with OCP, 21 (12.4%) showed positive mycotic cultures. In repeated cultures 12 patients (7.1%) were positive.

Signs of Generalised mycotic infection

In all 37 patients with positive urinary cultures, stool, sputum, and serotitres were investigated for fungi (Figure 1).

Ten out of 37 patients showed positive stool cultures ($10^2.7 - 10^6.9$). In 8 out of 37 patients sputum and/or throat swabs were positive ($10^3 - 10^7.3$). At the same time all these patients also had positive stool cultures.

Serum titres between 320 and 640 were found in 6 patients. The urine of patients with positive stool and sputum cultures contained mostly more than $10^4$ fungi/ml (8 out of 10 patients); in the remaining 2 patients the urine contained $10^3 - 10^4$ fungi/ml. Patients with less than $10^3$ fungi/ml urine had negative stool, sputum, and serum titre results.

Thus in patients with funguria, signs of generalised infection were found if more than $10^3 - 10^4$ fungi/ml appeared in the urine. The reservoir for these fungi seems to be the intestinal or respiratory tract.
Figure 1. Comparison of positive cultures in urine, stool, sputum, and serotitre in 37 patients

Figure 2. Sterile cultures of 109 patients (%) in bladder puncture (BP), catheter (CU), and midstream (MU) urine
Techniques of urine sampling

One hundred and fifteen patients with chronic pyelonephritis were investigated in a blind study to compare simultaneously bladder puncture (BP), midstream (MU), and catheter (CU) urine. During the same ten minutes urine was first obtained by BP, then MU and lastly CU from the same patient (Figure 2).

Sterile urines were found in 109 patients (BP) with insignificantly smaller numbers of sterile results appearing in MU and CU. False positive results occurred in CU in 2.8%, and in MU in 6.4% of all cases. False negative results in MU and CU were not observed. Positive cultures were obtained in 6 patients (BP), 9 patients (CU) and 13 patients (MU). If we take into consideration only the positive cultures, CU and MU have a high incidence of false positive results compared with BP. Midstream urine cultures are sufficient for the detection of mycotic urinary tract infection, but should be followed by bladder puncture before start of treatment.