Department of Clinical Microbiology, H:S Hvidovre Hospital,
Copenhagen, Denmark

ALICE FRIIS-MØLLER, MARGRETHE LÜNEBORG-NIELSEN

*Diagnosis, treatment and registration of urinary tract
infections in geriatric patients*

SYMPTOMATIC AND ASYMPTOMATIC BACTERIURIA
IN GERIATRIC PATIENTS

ASYMPTOMATIC BACTERIURIA IN PATIENTS WITHOUT CATHETER À DEMEURE

Bacteriuria ($\geq 10^5$ CFU/ml) is very common among elderly people, the ratio man/woman is 1:2. It is very important to distinguish between symptomatic and asymptomatic bacteriuria. Studies of outpatients show higher prevalence of asymptomatic bacteriuria with rising age. Among women older than 60 years of age, 5-10% have bacteriuria. The prevalence rises to 20-30% among women older than 80 years. For men older than 70 years the prevalence is 5-10%. Among institutionalised elderly people the prevalence for asymptomatic bacteriuria rises to 17-55% for women and 15-31% for men. More than 90% of people with asymptomatic bacteriuria have pyuria, while 30% of the same population without bacteriuria have pyuria.

Risk factors for development of bacteriuria are the following: loss of estrogen effect on the genitourinary mucosa and thereby a higher pH of the mucus in vagina, leading to a shift in colonization from lactobacilli to Gram-negative rods, catheterization, diminished detruser function of the bladder and increased residual urine, hypertrophia of the prostate gland and diabetes mellitus and neurological diseases with diminished bladder control; physiological reduction of the kidney function and lowering of the Tamm-Horsfall protein that would normally cover the type 1 pili of the Gram-negative rods and inhibit the bacterial adhesion.

There is no evidence that antimicrobial treatment of asymptomatic bacteriuria decreases the morbidity or the mortality of geriatric patients. On the contrary, the treat-

ment will often be associated with adverse effects, interaction with other drugs and potentially, increased emergence of resistance. If a patient has no symptoms and is not subject to any instrumentation, there is no indication for urine culture.

Conclusion : Asymptomatic bacteriuria in geriatric patients should not generally be treated with antibiotics. The only clear indication for antimicrobial therapy of asymptomatic bacteriuria is when the geriatric patient is to undergo invasive genito-urinary procedures.

SYMPTOMATIC BACTERIURIA IN GERIATRIC PATIENTS

The most common symptoms are : dysuria, stranguria, polakisuria, incontinence, bad smell. Other symptoms: bacteremia, fever, backpain, uretritis, epididymitis, hematuria and confusion.

DIAGNOSIS

The bacteriuria diagnosis is made by quantitative culture of noncentrifuged aseptic taken urine. The result $\geq 10^5$CFU/ml of one to two bacterial species is considered significant. Dipsticks, detecting leucocyte esterase and bacterial nitrate reductase, are not very useful diagnostics for bacteriuria in geriatric patients. First of all, many patients have pyuria without bacteriuria, secondly, some of the most common urinary tract pathogens in the elderly, namely enterococci and staphylococci and pseudomonas do not produce nitrate reductase. The sensitivity of the dipsticks in this population is low, but the specificity is high. Many old women with urinary tract symptoms also have infections involving the kidneys and many old men have prostatitis. This is the reason why geriatric patients with symptomatic bacteriuria should have longer antimicrobial treatment than younger patients.

Bacteriology: *E. coli* is still the most common urological pathogen. Among elderly women *E. coli* constitutes 50-70% of the isolates. In men enterococci are often isolated as well as *E. coli, Proteus mirabilis, Klebsiella pneumoniae, Enterobacter cloacae* and *Pseudomonas aeruginosa.* Because of the very mixed etiology it is difficult to recommend the most suitable "blind" therapy.

We recommend that a urine specimen should be taken for culture and sensitivity testing before any antimicrobial treatment is started. After the urine sample is taken treatment according to the local sensitivity patterns of best choice can be started and then changed if the isolate is resistant to the chosen therapy. In our hospital we recommend: Pivmecillinam 400 mg x 3 p.o. for 7 days or, if the patient is allergic to penicillin: Trimethoprim 200 mg x 2 p.o. for 7 days. We had to give up sulfamethizole as "blind" therapy as 1/3 of all *E. coli* isolates were resistant.

RECOMMENDATIONS

Asymptomatic bacteriuria: No antibiotics.

Symptomatic bacteriuria: Take urine for culture + sensitivity testing, and blood culture, and start "blind" therapy.

Patients with obstructive urological diseases: treatment to remove the obstruction.

Patients with CAD: Only antimicrobial treatment if the patient has serious symptoms and fever.

Patients with recurrent cystitis: Prolonged low dosage antimicrobial prophylaxis (up to 3 months) one dosage in the evening. Change and choice of drug after sensitivity testing of the actual urine isolate.

REGISTRATION

To make recommendations for the initial therapy both for treatment of urinary tract infections and bacteremia (which can be a severe complication to urinary tract infection), you have to register all the isolates and the sensitivity patterns of the microbes. The results of the sensitivity registrations show which antimicrobial agents are most prudent to use and also give indications of an eventual increase in resistance. This could be a result of overuse of antibiotics and thereby putting a selective pressure on the hospital flora and/or spread of resistant organisms because of lack of good hospital hygiene.

Please refer to the authors for other literature items.
2001.12.01

SUMMARY

Bacteriuria ($\geq 10^5$ CFU/ml) is a very common phenomenon in elderly people, occurring twice as frequently in women than in men. There are symptomatic and asymptomatic types of bacteriuria. Risk factors include: a decrease in the estrogen level in women after the menopause, catheterisation, urinary bladder dysfunction, hypertrophy of the prostate gland, diabetes, neurological illnesses. The diagnosis of bacteriuria is based on quantitative urine culture (positive result – $\geq 10^5$ CFU/ml bacteriae). The most frequent pathogens are: *E. coli*, enterococci, staphylococci, *Pseudomonas aeruginosa*, *Proteus mirabilis*. The antimicrobial therapy is not advised for asymptomatic bacteriuria. In the case of symptomatic bacteriuria it is advised to take urine for culture and to perform sensitivity testing as well as blood culture and to start a "blind therapy". In order to use the antimicrobial

treatment effectively, the most frequently occurring pathogens should be registered and their sensitivity patterns in the given hospital recognised.

Diagnostyka, leczenie i rejestracja infekcji układu moczowego u pacjentów
w podeszłym wieku

Bakteriuria ($\geq 10^5$ CFU/ml) jest zjawiskiem bardzo powszechnym u osób w podeszłym wieku, dwukrotnie częściej występującym u kobiet niż u mężczyzn. Rozróżnia się bakteriurię bezobjawową i objawową. Czynnikami ryzyka są: spadek poziomu estrogenów u kobiet po okresie przekwitania, cewnikowanie, dysfunkcja pęcherza moczowego, przerost prostaty, cukrzyca, choroby neurologiczne. Diagnostyka bakteriurii opiera się na ilościowych posiewach moczu (wynik pozytywny $\geq 10^5$ CFU/ml bakterii). Najczęstszymi patogenami są: *E. coli*, enterokoki, stafylokoki, *Pseudomonas aeruginosa*, *Proteus mirabilis*. Nie zaleca się antybiotykoterapii przy bakteriurii bezobjawowej. W przypadku bakteriurii objawowej zaleca się pobranie moczu do posiewu i oznaczenie wrażliwości bakterii oraz dodatkowo wykonanie posiewu krwi i rozpoczęcie „terapii empirycznej". Aby skutecznie stosować antybiotykoterapię, należy rozpoznać najczęściej występujące patogeny na danym obszarze i ich antybiotykowrażliwość.