Lettera all'Editore

Letter to the Editor

The undefined role of Gram positive bacteria in chronic prostatitis development

Ruolo indefinito dei Gram positivi nello sviluppo della prostatite cronica

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We recently completed a study on the epidemiological features of patients with chronic prostatitis. More precisely, we investigated the demographic, behavioural, clinical and medical history characteristics of men with chronic prostatitis in order to identify characteristics that might be associated with the microbiological findings of their urine and prostate secretion samples. This case control prospective study took place at the Tzaneion General Hospital of Piraeus (Attica, Greece) from March 2009 to March 2012. The study group included a total of 189 patients who had symptoms of chronic bacterial prostatitis. Seventy-two (42.46%) out of the 155 patients who finally enrolled into the study reported unprotected or safe oral and anal intercourse, additionally to genital sex, while 12 (7.74%) reported only oral intercourse. All patients were microbiologically evaluated with the Meares-Stamey test. The samples were examined directly and cultured. Given that there is no standard cut-off level of the number of bacteria in both urine and prostate secretion samples for the diagnosis of chronic bacterial prostatitis, we defined the lowest acceptable for each. Almost seventy-four per cent of the positive culture tests revealed one organism, 17.9% revealed two organisms and 7.4% three organisms. Of the pathogens isolated, the most frequent was *Escherichia coli*, being isolated in 56.7% of urine and prostate secretion cultures. Detected in 16.4% of the urine and prostate secretion samples, *Enterococcus faecalis* was the second most common pathogen. Other Gram + bacteria were isolated in 35.7% of the samples. The frequency rate of Gram + bacteria isolates observed in our study was relatively high. Although the explanation for this finding has not yet been found, patients with Gram + bacteria isolates reported chronic cycles of bacterial prostatitis and multiple courses of antibiotics [1]. Of note, the use of fluoroquinolones is generally recommended for the treatment of prostatitis and the duration of the treatment suggested by the current guidelines is practically extended [2].

The most frequent Gram + bacteria isolated from the urine and prostate secretion samples were *Coagulase-negative staphylococci* (CoNS). However, unusual bacteria such as *Streptococcus mitis* and *oralis* (SMO) were also isolated in a few cases (5.7%). In almost 66% of the CoNS positive culture tests more than one organism from a single specimen was isolated, with most being found in patients reporting symptom persistence upon follow up. Notably, CoNS counts varied from 200-80000 cfu/ml, with most being less than 1000. In all cases CoNS isolates were sensitive to quinolones that were previously administered. To our knowledge, the rate of bacterial growth is widely variable, rendering possible the observation of microorganisms growing fast or slowly. Bacteria exhibiting slow growth rates such as CoNS show a higher degree of resistance to antibiotic therapy [3]. It should also be mentioned that CoNS isolated from chronic bacterial prostatitis sufferers seem to be medium to strong producers of biofilm, while low bacterial counts with uropathogens in men may be clinically mean-

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ingful, because contamination is uncommon in males [4-6]. Whether our findings are associated with pathogenicity factors able to maintain chronic inflammation in the genitourinary system is not known. However, individual patients show a scarce expression of bacterial disease in biological fluids, due to the presence of intraglandular biofilm. Indeed, the presence of a biofilm may represent the reason for difficult diagnoses and ineffective antibacterial treatments [7].

SMO were detected in 50% of patients positive for polymicrobial flora. SMO counts varied from 300-2200 cfu/ml in pure SMO isolates to 800-3000 cfu/ml in mixed isolates. We initially hypothesised that the presence of SMO may be the result of sample contamination since alpha-haemolytic streptococci and aerobes are traditionally considered urethral and vaginal contaminants. On the other hand, the lack of SMO growth in pre-prostatic massage samples of these patients and SMO eradication after antibiotic treatment suggested true infection. Of note, almost all patients found with SMO in their urine and prostate secretion samples reported only oral intercourse. We therefore hypothesize that retrograde entry of SMO from oral cavity to the prostate following insertive oral intercourse is not to be excluded. Indeed, direct and indirect evidence from studies of patients with gonococcal pharyngitis and non-gonococcal urethritis points to ante or retrograde entry of bacteria from the oral cavity to the urethra and vice versa following oral intercourse as a primary mode of transmission for pathogenesis of infection [8-11]. Similarity of organisms recovered from infection and normal oropharyngeal flora such as streptococci, *Haemophilus spp., Neisseria meningitidis, Adenoviruses* and *HSV-1* support the above-mentioned hypothesis [12].

Keywords: chronic prostatitis, Meares-Stamey test, *Streptococcus mitis, Streptococcus oralis.*

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RIASSUNTO

We recently completed a study on the association of the epidemiological features of patients with chronic prostatitis with the microbiological findings of their urine and prostatic secretion samples. It was noticed that the frequency rate of Gram + bacteria isolates observed in our study was relatively high. The most frequent Gram + bacteria were Coagulase-negative staphylococci (CoNS). However, unusual bacteria such as *Streptococcus mitis* and *oralis* (SMO) were also isolated in a few cases (5.7%). Almost all patients found with SMO in their urine and prostate secretion samples reported only oral intercourse. We therefore hypothesize that retrograde entry of SMO from the oral cavity to the prostate following insertive oral intercourse is not to be excluded.

SUMMARY

Gli autori hanno recentemente condotto uno studio teso a valutare l'associazione delle caratteristiche epidemiologiche dei pazienti con prostatite cronica ai risultati microbiologici dell'urinocoltura e delle secrezioni prostatiche. Si è notato una frequenza di isolamento di microrganismi Gram + relativamente elevata, con gli stafilococchi coagulasi negativi (CoNS) che hanno rappresentato i microrganismi isolati in maggior misura. Tuttavia, in alcuni casi (5,7%), sono stati isolati anche batteri insoliti quali Streptococcus mitis *e* oralis *(SMO). La quasi totalità dei pazienti in cui l'esame microbiologico (urine e secrezioni prostatiche) ha evidenziato SMO ha riferito di praticare esclusivamente sesso orale. Abbiamo quindi ipotizzato che l'ingresso di SMO dalla cavità orale alla prostata, successivamente al rapporto sessuale orale, sia un'evenienza da non escludere.*

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