High Prevalence of Sterile Pyuria in the Setting of Sexually Transmitted Infection in Women Presenting to an Emergency Department

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Patients diagnosed with sexually transmitted infections (STIs) are common in the emergency department (ED) setting. The clinical presentations for sexually transmitted infections and urinary tract infections (UTIs) may overlap, and abnormal urinalysis (UA) findings of leukocyte esterase and pyuria are common in both UTIs and STIs. Emergency clinicians must make decisions whether to empirically treat for UTIs based on initial UA results alone, as confirmatory urine culture results are not readily available for several days after the patient’s ED visit. This study is performed to determine the frequency of sterile pyuria in women with confirmed STIs, as well as if the absolute number of leukocytes on microscopy or nitrite on urine dipstick correlated with positive urine cultures in patients with confirmed STIs. Additionally, we examined if patients prescribed UTI antibiotics were appropriately given those based on their urine cultures.

Methods

A retrospective chart review of adult female patients who tested positive for Neisseria gonorrhoeae, Chlamydia trachomatis, and/or Trichomonas vaginalis during the 5 year study period was conducted. The study setting is a large metropolitan ED with an associated Emergency Residency Program. Descriptive statistics were obtained for all variables, and associations between various findings were sought using the Fisher’s exact test for categorical variables. Comparisons of proportions was calculated using the N-1 Chi-squared analysis.

Results

1052 female patients who tested positive for Neisseria gonorrhoeae, Chlamydia trachomatis, and/or Trichomonas vaginalis were entered into the database. The prevalence of pyuria in all cases was 394/1052, 37% (95% CI 0.34-0.40). Of the cases with pyuria, 293/394, 74% (95% CI 0.70-0.78) had sterile pyuria with negative urine cultures. The prevalence of positive urine cultures in our study population was 101/1052, 10% (95% CI 0.08-0.11). Culture positive urines had a mean of 34 leukocytes per high-power field, and culture negative urines had a mean of 24 leukocytes per high-power field, with a difference of 10, (95% CI 3.46-16.15). Only 123 cases tested positive for nitrite on the urinalysis dipstick, 50/123, 41% (95% CI 0.32-0.49) had positive urine cultures, and 73/123, 59% (95% CI 0.51-0.68) had negative urine cultures. Nitrite positive urines were actually 18% more likely to be associated with negative urine cultures in the setting of positive STI cases, (95% CI 4.95-30.42, p=0.0048). 295 patients were prescribed antibiotics for suspected UTI (Table 2). Of these, 195/295, 66% (95% CI 0.61-0.71) had negative urine cultures, and 100/295, 34% (0.33, 95% CI 0.28-0.39) had positive urine cultures. Chi square analysis yields a difference of these proportions of 32% (95% CI 23.92-39.62, p<0.0001)

Discussion

Previous studies have found woman with urinary symptoms are over diagnosed with UTI and underdiagnosed with STIs, but no prior research has specifically analyzed urine results of known STI positive patients. This study found that 74% of the cases with pyuria were sterile, and that there was a very low overall incidence of positive urine cultures (10%) in the setting of women with positive STIs. We also found that in this setting , positive nitrite on the urine dipstick is not a good indication of UTI.

Conclusions

This study demonstrates that female patients with STIs and pyuria have a high prevalence of sterile pyuria. Our results suggest reliance on pyuria or positive nitrites for the decision to add antimicrobial therapy for a presumed urinary tract infection in cases where STI is confirmed or highly suspected is likely to result in substantial over-treatment.