
Do pre-operative urine cultures correlate with intraoperative renal cultures and final blood cultures in obstructive pyelonephritis?

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INTRODUCTION AND OBJECTIVES:

Following surgical decompression of the infected, obstructed collecting system, culture directed antibiotic therapy maximizes therapeutic efficacy. Initially, patients are empirically placed on broad-spectrum antibiotics pending speciation of pre-operatively obtained urine cultures. Voided urine cultures may not always correlate with renal urine cultures obtained at the time of surgical decompression, which may result in suboptimal antibiotic coverage. The purpose of this study is to compare the correlation between pre-operative voided urine cultures, intraoperative renal cultures and ultimate blood cultures in patients with obstructing, infected ureteral stones.

METHODS: A retrospective review of 100 consecutive patients presenting to a single academic institution with obstructed, infected ureteral stones between July 2014 and August 2018 was performed. Data regarding patient demographics, pre-operative voided urine cultures, intraoperatively collected renal cultures and final blood cultures were correlated with length of hospital stay. Mann-Whitney U test and Spearman's rank correlation coefficient were performed, with $p < 0.05$ considered significant.

RESULTS: In the 100 obstructed, infected patients, 47 had intraoperatively collected renal cultures available. The mean patient age was 51.3 (16-88) and mean BMI was 30.6 (15.0- 65.6). Renal cultures correlated with pre-operative urine cultures in 69.2% of cases ($r=0.52$, $p < 0.01$) but were discordant in 30.8% of cases. In comparison, blood cultures did not correlate with pre-operative urine cultures in 36.4% of cases ($r=0.18$, $p=0.26$). Patients had a significantly longer hospital stay when pre-operative urine cultures were discordant with renal cultures (7.3 vs. 4.6 days; $p=0.05$) or when pre-op cultures did not correlate with final blood cultures (9.3 vs 4.6 days; $p=0.02$). In addition, patients with positive intrarenal urine cultures had a significantly longer hospital stay than patients with negative intrarenal urine cultures (6.6 vs 3.5 days; $p=0.008$).

CONCLUSIONS: Pre-operatively collected urine cultures do not always correlate with renal or blood cultures in obstructive pyelonephritis, and hospital stays were significantly longer when cultures did not correlate or when intrarenal cultures were positive. This study highlights the significant discordance between cultures obtained proximal to obstruction compared to distal to obstruction and the importance of collecting intraoperative renal urine cultures at the time of surgical decompression.

Accepted for Publication: Mar 2019
The authors have no funding, financial relationships, or conflicts of interest to disclose.
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