Patterns of preoperative urinary infection in a contemporary series of struvite stone formers undergoing percutaneous nephrolithotomy

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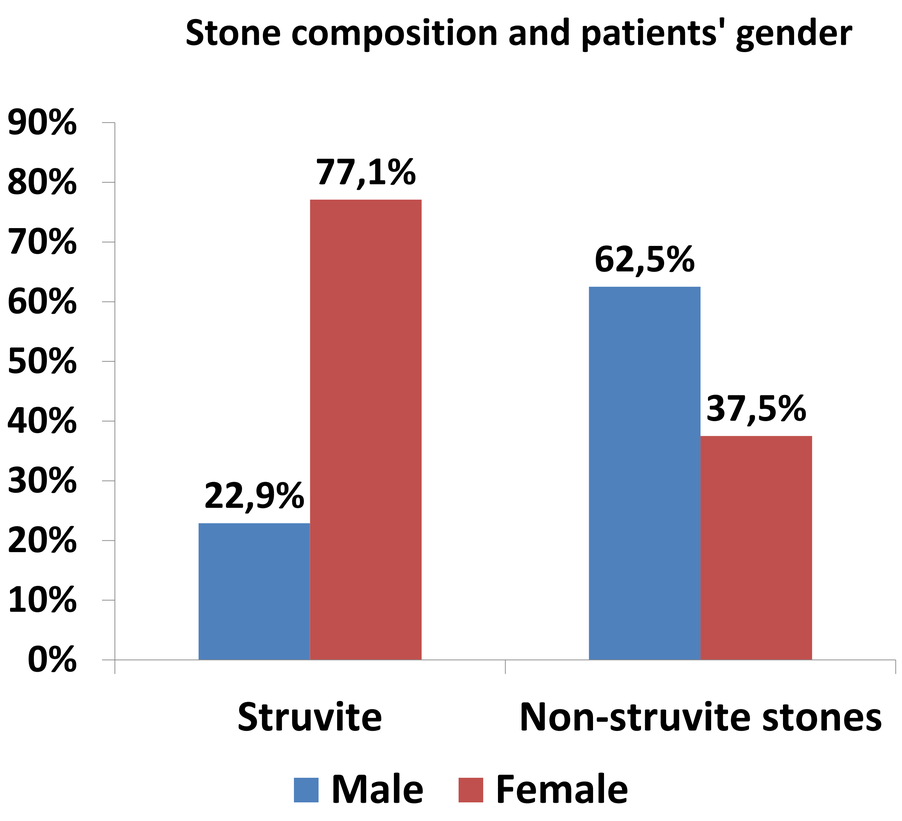
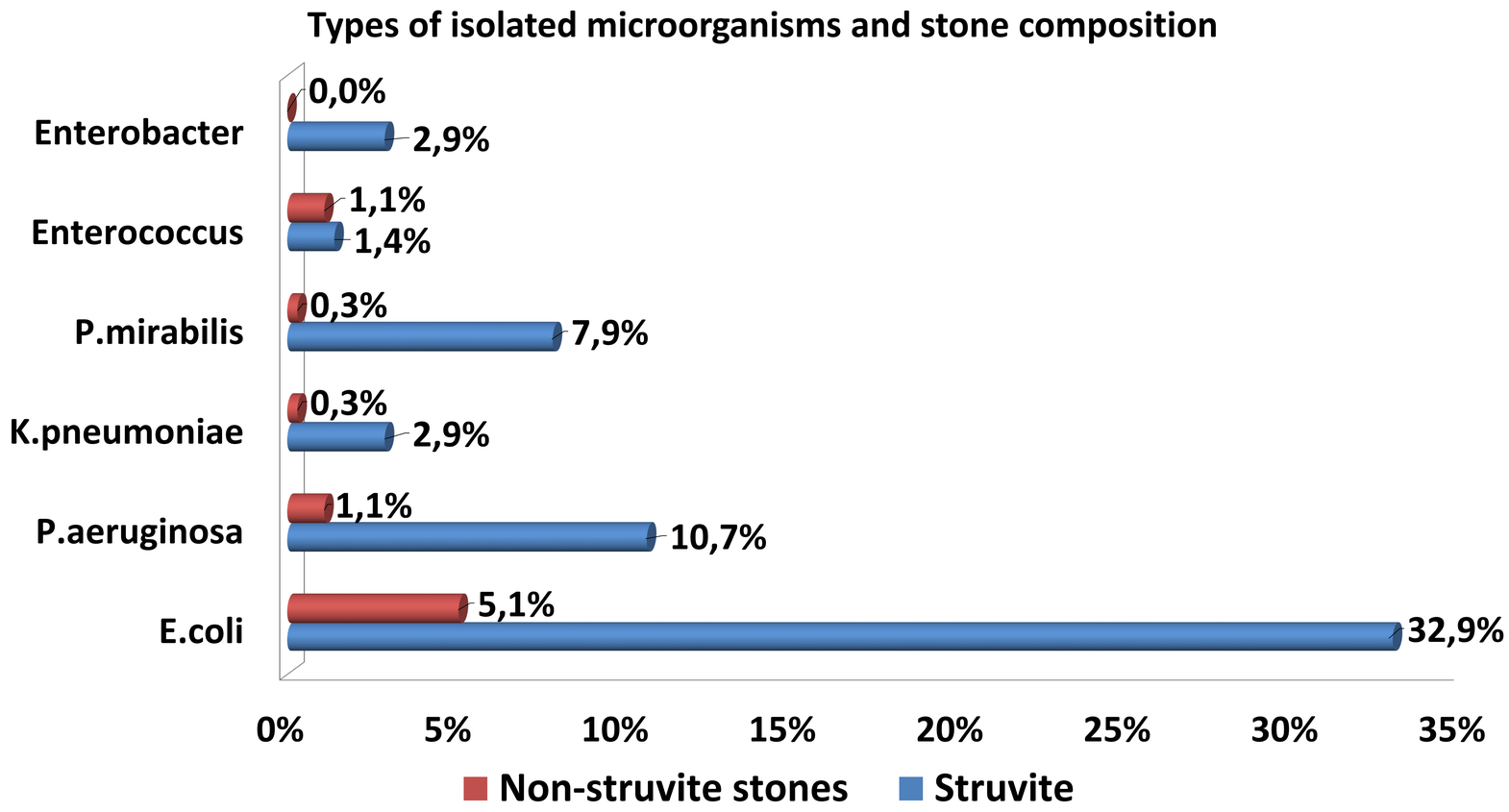
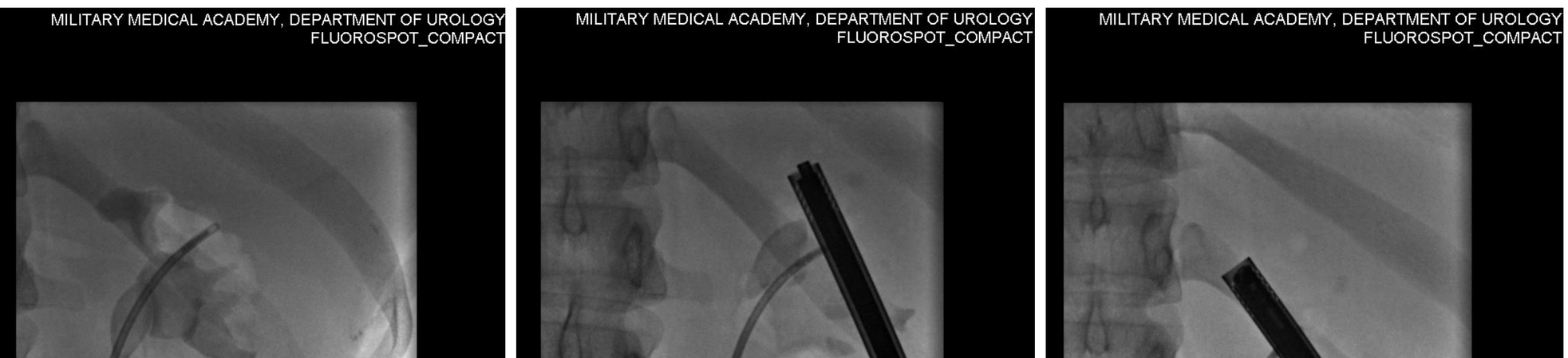
Introduction and objective: Struvite stones are usually associated with infection with urease-producing bacteria, often causing the formation of staghorn stones, which occupy a significant portion of the renal collecting system. The treatment of choice for this type of stones is percutaneous nephrolithotomy (PCNL), which aims complete stone clearance and eradication of infection. The objective of this study is to present the patterns of urinary bacterial infection in a contemporary series of struvite stone formers, undergoing PCNL.

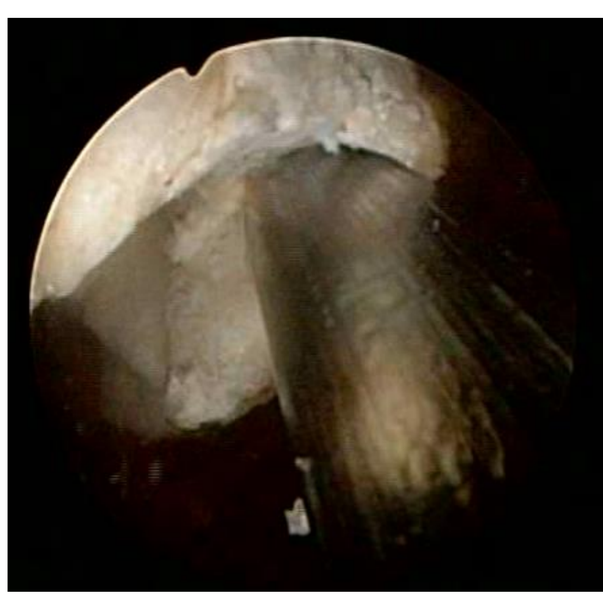
Material and methods: The medical records of 477 consecutive patients with 495 renal units, undergoing PCNL between May 2011 and April 2015 were prospectively reviewed. Data on preoperative urine cultures and bacteriology of patients with struvite and non-struvite stones were compared and analyzed.

Results: Struvite stones were identified in 140 (28,3%) of the 495 renal units. 77.1% of struvite formers were female, compared to 37.5% in the non-struvite stones group (p=0.000). Preoperative infection rate was significantly higher in the group of struvite stone formers (58.6% vs 9.9%; p=0.000). The most common bacterial types, associated with struvite stones were Escherichia coli in 32.9%, Pseudomonas aeruginosa – in 10.7% and Proteus mirabilis – in 7.9%. Urease-producing bacteria were more common in struvite stone formers (21.5% vs 1.7%; p<0.001). Non-urea-splitting microorganisms were found in 37.2% of struvite stone patients, compared to 8.2% in non-struvite formers (p<0.001).









Conclusions: The results from this study suggest significant association of struvite lithiasis with preoperative urinary tract infection. The presence of non-urea-splitting bacteria in a considerable proportion of patients in this contemporary series of struvite stone formers reveals the importance of preoperative urine culture and antibiotic prophylaxis and supports further studies on their urea-splitting potential.

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