Prediction of Bacteriuria based on Clinical or Laboratory Parameters in Patients with Indwelling Ureteral Stents prior to Ureterorenoscopy should not substitute for Urine Cultures

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Objectives Urine cultures prior to secondary ureterorenoscopy are recommended to exclude bacteriuria but results are often pending on the day of surgery. We sought to develop predictive models that reliably indicate the absence of bacteriuria in patients with indwelling ureteral stents based on readily available data. Patients and Methods Records of patients undergoing secondary ureterorenoscopy between 2014 and 2017 were assessed retrospectively. Patient characteristics, automated urinary sediment analysis, blood analyses and results of urine cultures were analyzed using descriptive statistics, ROC curves, logistic regression and model selection. Results Of 462 patients, 101 (21.9%) had positive urine cultures. Urinary leucocytes, nitrite and pH, patient age and sex and blood CRP levels were associated with bacteriuria in logistic regression (p < 0.05) but did not sharply separate patients with and without bacteriuria. A multiple logistic regression model considering all six parameters and their interactions indicated a low probability of bacteriuria (8%) for 74% of the patients. Alternatively, recursive partitioning indicated low probability of bacteriuria (8%) if four criteria are simultaneously fulfilled (54% of the patients): Male, negative nitrite, urine leucocytes ≤ 1,174/μl, blood CRP ≤ 13 mg/L. Conclusions Bacteriuria in patients with indwelling ureteral stents prior to ureterorenoscopy can hardly be predicted based on single clinical or laboratory parameters. Though the combination of relevant predictors allows for exclusion of UTI with relatively high confidence in most patients, the residual diagnostic uncertainty calls for optimized organizational measures to assure availability of urine cultures prior to surgery.