Utility of CellDetect® to Reduce Indeterminate Urine Cytology Cases
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ABSTRACT

Introduction: High rates of indeterminate diagnoses remain a challenge in urine cytology practice. CellDetect® is a novel stain that discriminates malignant from benign urothelial cells. Early studies showed this stain can accurately identify urothelial carcinoma. Our aim was to determine the feasibility of CellDetect® to reduce indeterminate urine cytology cases.

Methods: ThinPrep slides from a variety of urine samples (32 voided, 5 catheterized, 1 bladder washing, 1 renal pelvis specimen) were prepared with Papanicolaou and CellDetect® stains. The Pap diagnoses were: 1 non-diagnostic, 8 negative, 14 atypical, 10 suspicious and 6 high-grade urothelial carcinoma (HGUC) cases. Based on CellDetect® staining the number of indeterminate diagnoses upgraded, downgraded, or that remain unchanged was evaluated. Follow up tissue diagnoses were recorded.

Results: Due to positive staining in 15 cases (38%), diagnoses were upgraded from non-diagnostic to atypical (1), negative to atypical (2), atypical to HGUC (4) and suspicious to HGUC (8) (Figure 1). In 7 cases (18%) without staining, diagnoses were downgraded from atypical to negative (6) and HGUC to atypical (1). Diagnoses remained unchanged in 17 cases (44%). There were 3 cases where benign urothelial cells were stained, and benign urothelial clusters in 6 cases also stained. There was 1 false negative case where a HGUC with squamous cell differentiation failed to stain.

Conclusions: Based on CellDetect® staining the diagnosis in 22 (56%) urine cytology cases would change. In so doing, ancillary testing helped reduce the number of indeterminate diagnoses, including a decrease in atypical diagnoses by 15% and suspicious cases by 21%, while increasing the number of definitive HGUC diagnoses by 31%. When evaluated together with nuclear morphology false positive staining of benign cells and clusters, and false negative cases with squamous differentiation of HGUC cells, could be identified.

INTRODUCTION

• High rates of indeterminate diagnoses remain a challenge in urine cytology practice.
• CellDetect® is a novel stain that discriminates malignant from benign urothelial cells.
• Early studies showed this stain can accurately identify urothelial carcinoma.
• Our aim was to determine the feasibility of CellDetect® to reduce indeterminate urine cytology cases.

METHODS

• ThinPrep slides from a variety of urine samples (32 voided, 5 catheterized, 1 bladder washing, 1 renal pelvis specimen) were prepared with Pap and CellDetect® stains.
• The Pap diagnoses were: 1 non-diagnostic, 8 negative, 14 atypical, 10 suspicious and 6 HGUC cases.
• Based on CellDetect® results the number of indeterminate diagnoses that were upgraded, downgraded or that remain unchanged was evaluated.
• Available follow up tissue diagnoses were recorded.

RESULTS

Table 1 (above) summarizes diagnoses before and after CellDetect® staining.
• Due to positive staining in 15 cases (38%), diagnoses were upgraded from non-diagnostic to atypical (n=1), negative to atypical (n=2), atypical to HGUC (n=4) and suspicious to HGUC (n=8) (Figure 1).
• In 7 of the cases (18%) without staining, diagnoses were downgraded from atypical to negative (n=6) and HGUC to atypical (n=1). Diagnoses remained unchanged in 17 cases (44%).
• There were 3 cases where benign urothelial cells were stained, & benign urothelial clusters in 6 cases also stained.
• There was 1 false negative case where a HGUC with squamous cell differentiation failed to stain.

CONCLUSIONS

• Based on CellDetect® staining the diagnosis in 22 (56%) urine cytology cases would change.
• In so doing, ancillary testing helped reduce the number of indeterminate diagnoses, including a decrease in atypical diagnoses by 15% and suspicious cases by 21%, while increasing the number of definitive HGUC diagnoses by 31%.
• When evaluated together with nuclear morphology false positive staining of benign cells and clusters, and false negative cases with squamous differentiation of HGUC cells, could be identified.

No relationship exists that represents a possible conflict of interest with regard to the content of this presentation.