

Featuring:

- Reporting and Interpretation of Epithelial Cells in Urine

Individual Highlights:

Using Urinalysis Wisely: Interpretation of Urinary Epithelial Cells

1

Using Urinalysis Wisely: Interpretation of Urinary Epithelial Cells

Effective February 4th, 2019, the following comment will accompany all positive results for renal and transitional epithelial cells in urine to address isolated and unexpected positivity:

“Presence of transitional epithelial cells are occasionally found in healthy individuals but unexplained increased numbers, especially when verified on multiple occasions, may require further investigations to determine cause.”

There are three types of epithelial cells reported by routine microscopy urinalysis:

- Squamous epithelial cells
- Renal epithelial cells
- Transitional epithelial cells

Epithelial cells line the urinary tract and by way of a normal regeneration process become detached and are eliminated in urine. While their presence in urine may reflect this normal sloughing process, their presence could also signal a recent or ongoing pathological process. **Patient presentation, history and reproducibility of repeat testing may be needed to discern the clinical importance of positive results.**

The laboratory’s ability to detect epithelial cells has improved and laboratories are now reporting the presence of both renal and transitional epithelial cells, in addition to squamous epithelial cells.

The automated technology utilized provides for the following quantifications of epithelial cells:

EPITHELIAL CELLS	REPORTABLE RESULT	EQUIVALENT COUNT
Squamous	-	<3/HPF
	1+	3-7/HPF
	2+	8-14/HPF
	3+	>14/HPF
Renal or Transitional	-	0/every HPF
	1+	1-2/any HPF
	2+	>2/any HPF

HPF = High Power Field (400X)

It should be noted that the count quantifications of renal and transitional epithelial cells show limited differences between gradations. Hence, the degree of positivity of these results should not be taken as a diagnostic criterion.

Squamous epithelial cells: These cells line the lower urinary tract and higher amounts are generally taken to indicate contamination of sample with urine from the lower urinary tract or vaginal secretions. Patients are given specific instructions on how to cleanse and obtain a clean-catch midstream urine. In men, squamous epithelial cells are seen rarely and in relatively small amounts. If there are urethral symptoms and the midstream urine has been collected correctly, the most likely cause of an elevated result is urethritis.



Renal & transitional epithelial cells: Renal epithelial cells line the renal tubules while transitional epithelial cells line the bladder, ureters and a portion of the urethra. These cells may be present in low amounts in normal urine, although the frequency of observing them is low. An unexpected positive result for these cells in the absence of clinical suspicion or symptoms is not sufficient evidence to warrant other investigations. A prudent course of action would involve first repeating urinalysis testing, where a subsequent second positive result is unlikely in the absence of associated pathology. If another positive result is obtained on repeat testing, consultation or referral to a specialist may be required. Increased amounts of renal epithelial cells are discharged into the tubular lumen and eliminated in urine in acute renal failure and other tubulointerstitial diseases. Increased amounts of transitional epithelial cells are found in inflammatory and malignant diseases of the lower urinary tract. As a reminder of interpretive considerations, the above comment will accompany all positive results for renal and transitional epithelial cells.

Summary:

- Three types of epithelial cells are reported from routine microscopic urinalysis reports.
- Presence of these may be normal or may suggest a pathological process depending on reproducibility, and patient history and presentation.
- Squamous epithelial cell positivity usually arise from contamination from vagina or lower urinary tract in females, but can indicate urethritis if there are suggestive urethral symptoms.
- Renal epithelial cell or transitional cell positivity in absence of symptoms or suspicion should be followed up by repeat of urinalysis – confirmed positives are unusual and may require further investigations to determine otherwise.

Acknowledgements:

We acknowledge the assistance of Drs. Gary Rideout and Michael Organ in their review and helpful comments; and Nicole Higdon for review and proof-reads.

Dr. Ed Randell
Chief, Clinical Biochemistry
Room 1J442A, HSC Site
300 Prince Philip Drive
St. John's, NL
A1B 3V6

PHONE:
(709) 777-6375

FAX:
(709) 777-2442

E-MAIL:
Ed.randell@easternhealth.ca

We're on the Web!

See us at:

<http://www.easternhealth.ca/Professionals.aspx?d=2&id=2010&p=1507>