The Paris System for Urine Cytology

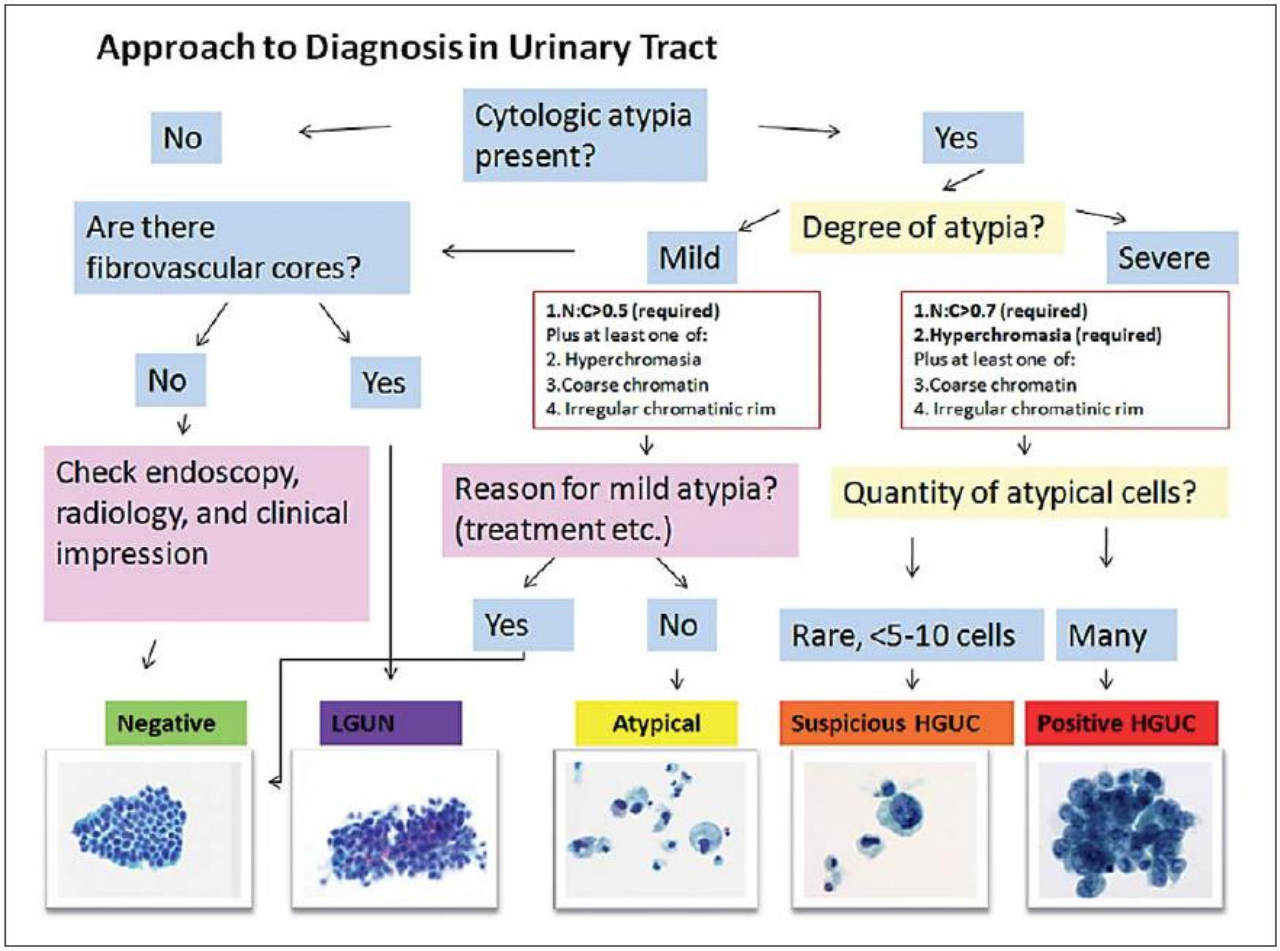

Table 3. Comparison of morphologic criteria of abnormal cells in The Paris System for Reporting Urinary Cytology

Category	N:C ratio (1)	Nuclear chromasia (2)	Chromatinic rim/nuclear membrane (3)	Chromatin quality (4)	Mandatory (major) features	Minor features
AUC[a]	>0.5	similar to umbrella cells or dark/very dark[a]	fine and even or uneven shape and thickness[a]	finely granular or coarsely clumped[a]	1	2–4 (one of the features 2–4 noted with 'a' must be a second feature identified in the cells of interest in addition to number 1)
SHGUC[b]	>0.7	very dark	uneven shape and thickness	coarsely clumped	1, 2	3, 4 (at least one of the above must be a third feature identified)
HGUC[b]	>0.7	very dark	uneven shape and thickness	coarsely clumped	1, 2	3, 4 (at least one of the above must be a third feature identified)

[a] Only one minor feature required. [b] Only difference is the quantity: SHGUC = very few cells, 5–10 cells.

Table 4. Relative risk of the diagnostic categories outlined in The Paris System, based on studies to date.

Category	Risk of malignancy, %	Management
Unsatisfactory/nondiagnostic	<5–10	repeat cytology, cystoscopy in 3 months if increased clinical suspicion
Negative for high-grade urothelial carcinoma	0–10	clinical follow-up as needed
Atypical urothelial cells	8–35	clinical follow-up as needed; potential use of ancillary testing
Suspicious for high-grade urothelial carcinoma	50–90	more aggressive follow-up, cystoscopy, biopsy
Low-grade urothelial neoplasm	~10	need cystoscopy and biopsy to further evaluate grade and stage
High-grade urothelial carcinoma	>90	more aggressive follow-up, cystoscopy, biopsy, staging
Other malignancy	>90	more aggressive follow-up, cystoscopy, biopsy, staging

Table 2. Guidelines for estimating cellularity in instrumented urinary specimens

Prep diameter, mm	Area, mm^2	FN20 eyepiece 10× objective		FN20 eyepiece 10× objective		FN20 eyepiece 10× objective		FN20 eyepiece 10× objective	
		number of fields at FN20, 10×	number of cells/field for 2,644 cells total	number of fields at FN20, 40×	number of cells/field for 2,644 cells total	number of fields at FN20, 10×	number of cells/field for 2,644 cells total	number of fields at FN20, 40×	number of cells/field for 2,644 cells total
13	132.7	42.3	62.5	676	3.9	34.9	75.8	559	4.7
20	314.2	100	26.4	1,600	1.7	82.6	32	1,322	2

Review

ACTA CYTOLOGICA

Acta Cytologica 2016;60:185–197
DOI: 10.1159/000446270

Published online: June 18, 2016

Figures from:

The Paris System for Reporting Urinary Cytology: The Quest to Develop a Standardized Terminology

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Additional Studies

UroVysion FISH

4 Markers:
1-3) Chromosome enumeration probes targeting pericentromeric region on chromosomes 3, 7, and 17 (looking for aneuploidy)

4) Specific probe targeting 9p21 loci (p16 gene, looking for loss)

Analysis:
- Positive if ≥4 of 25 analyzed cells show two or more of chromosome 3, 7 or 17 (i.e., chromosome gain)

OR

- Positive if ≥12 of 25 analyzed cells show have total loss of 9p21

If not positive after 25 cells → keep counting until all cells are analyzed.

Note: Some reactive cells (e.g., Umbrella cells) can be tetraploid!