

Urinalysis and Body Fluids CS

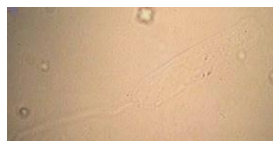
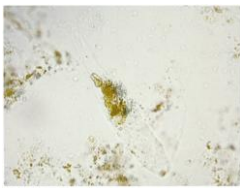
Unit 2; Session 7
Miscellaneous Structures
found in Urine Sediment

Miscellaneous Urinary Structures

- Topics Included in this session are
 - Cylindroids
 - Hemosiderin
 - Mucous threads
 - Oval Fat Bodies and Free Fat
 - Bacteria, Yeast, and other Parasites that can be observed in the urine sample
 - Spermatozoa
 - Artifacts

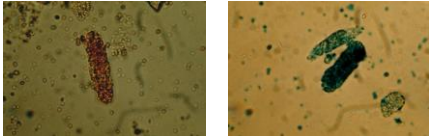
Cylindroids

Cylindroids, same as casts.



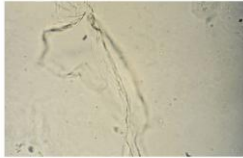
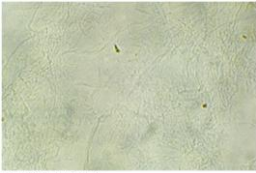
Hemosiderin

- Free granules of hemosiderin & inclusions in a cast
 - Patient had hemolytic event, ie. Incompatible transfusion, DIC, acute hemolytic anemia - such as sickle-cell anemia, etc.
 - Picture shows free granules of hemosiderin. X400.
 - Unstained & Prussian blue stain



Mucous Threads

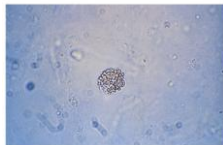
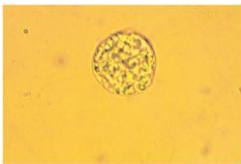
- Mucous threads have low refractive index: to locate them, use same microscopic techniques as for casts.
- Small amount is normal



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Oval Fat Bodies (OFBs)

- RTE cells that are undergoing fatty degeneration or have absorbed lipid in the filtrate.
- Can also be lipophages



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Oval Fat Bodies (OFBs)

- Maltese cross formation with polarized light
- Cholesterol esters polarize
- Triglycerides and neutral fats do not
- If negative check with Sudan III or oil red O stain

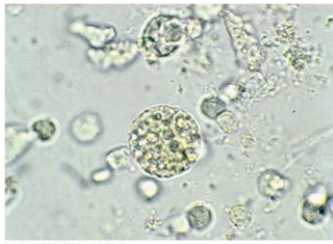


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Lipiduria

Oval fat bodies and WBCs



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Lipiduria

- Fat is not detected by chemical tests
- Fatty degeneration of tubules
 - Chronic glomerulonephritis
 - Diabetes mellitus
 - Eclampsia
 - Lipid nephrosis
 - Nephrotic syndrome
 - Toxic renal poisoning
 - Fat embolism
- Extensive injuries (crushing of subcutaneous fat)
- Fractures of the long bones

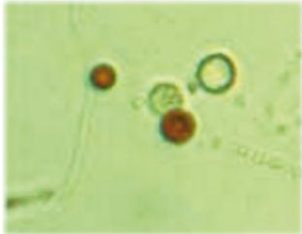
Lipiduria

- Polarized anisotropic fat droplets



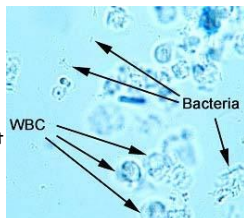
Lipiduria

- Sudan III-stained fat droplets



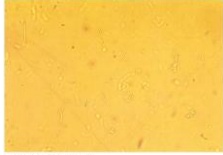
Bacteria

- Normally none present in urine
- May be contamination from urethra, vagina, or external sources
- Fresh, properly collected specimen that contains many bacteria usually indicates UTI
 - Especially if ↑# WBCs present



Bacteria

- Reported using semi-quantitative terms
 - Such as trace, 1+, 2+, etc.
- Nitrite may be positive, but not always
- WBCs may be present and more accurately reflect infection than does nitrite



Yeast

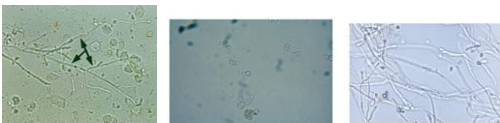
- Smooth, colorless
- May be budding
- May be mistaken for RBCs
- *Candida albicans* most common

Yeast cells



Yeast

- Reported using semi-quantitative terms
 - Such as trace, 1+, 2+, etc.
- Budding yeast or mycelial forms may be present
- Common in
 - Diabetics & Immunocompromised,



Yeast (cont.)

Budding yeast



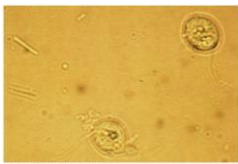
SM-stained yeast with pseudohyphae



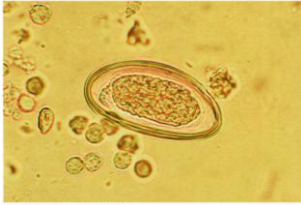
Urinary Sediment: Parasites

- Indigenous to urinary tract
- Vaginal or fecal contamination
- No chemical analysis available
- WBCs may be present

Parasites - *Trichomonas vaginalis*



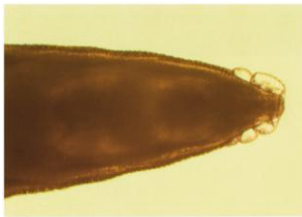
Parasites - *Enterobius vermicularis*



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Parasites - *Enterobius vermicularis*

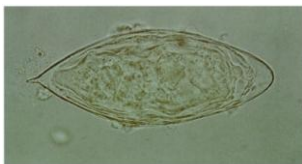
Head of the *Enterobius vermicularis*



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Parasites - *Schistosoma haematobium*

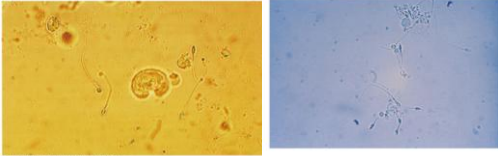
Schistosoma haematobium ovum



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Urinary Sediment: Spermatozoa

- Oval shaped heads with long tails
- May be seen in urine of men and women
- ?? Report them?



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Confusing Artefacts-Fibers

Fibers



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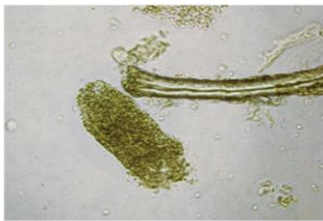
Debris from a diaper



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Urinary Casts: Confusing Artefacts-Hair

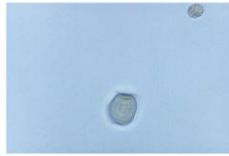
Hair and a coarsely granular cast



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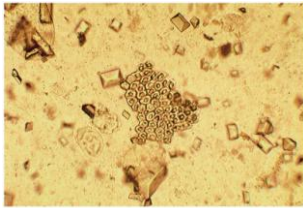
Artifact Interference

- Large pollen grain
- No usual sediment elements in view
- Grain is in a different liquid plane than the urine constituents due to its larger size



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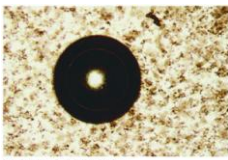
Fecal contamination



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Air bubbles

Air bubble and amorphous urates



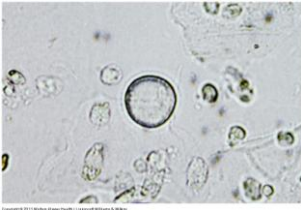
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Air bubbles, phosphate plate, and amorphous phosphates. Air bubbles can assume a variety of shapes, especially if the coverslip is moved or depressed



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Oil droplets



Summary

- Urine sediment may contain
 - Blood cells (RBCs and WBCs)
 - Epithelial cells (renal and transitional)
 - Oval fat bodies (cellular degeneration, anisotropic)
 - Infectious agents (bacteria, yeast, parasites)
 - Contaminants (squamous epithelial, bacteria, sperm, parasites and fecal matter)
 - Artifacts (air bubbles, oil droplets)

Reference Listing

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