Microscopic Sediment – White Blood Cells

Significance and source

- Few are normal - < 5 /hpf  *(Unlike RBCs, WBCs are capable of entering the urinary system - at will. They diapedise- move around in tissues, etc. by amoeboid movement.)*
- Larger amounts indicate inflammation/infection or seen in trauma, malignancy
- *Usually increased # of WBC is* Associated with *increased # of* bacteria
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- Condition of increased WBC in the urine called pyuria / leukocyturia
  - *usually are neutrophils can also be eosinophils or mononuclear - lymphs, monocytes, macrophages, etc.*
  - *Addressed on page 79*

- May be found in clumps - *significant finding, should note on report.*
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- Detection
  - High power
  - Fine adjustment

- Description
  - Greyish-blue sheen
  - @ 10-12 microns in diameter
  - Fine cytoplasmic granulation, rough surface, may have irregular edges. *Nuclei may be mono or poly, but often hard to see detail.*
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- rough surface, may have irregular edges. *Nuclei may be mono or poly, but often hard to see detail.*

- WBC can be confused with RBCs that are swollen, or renal epithelial cells.
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- WBC / leukocytes
- Higher level of magnification than normally used in routine examination.
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- WBC
- Leukocytes (unstained and Toluidine blue, hpf)
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- Phase contrast
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- Pus (degenerated neutrophils) – clumps / aggregates of neutrophils
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- WBCs and bacteria
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Eosinophils

- Hansel stain preferred over Wrights to demonstrate presence of eosinophils in urine.
  - Increases seen in variety of conditions, most notably allergic reactions such as acute graft rejection, schistosomiasis, & acute allergic interstitial nephritis
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- **Lymphocytes**
  - Occasionally seen in normal sediment
  - Increased numbers reported in acute allergic interstitial nephritis, graft rejection, etc.
  - Requires special staining to verify identity

- **Monocytes**
  - Also can be found in above conditions
  - Also requires special staining to verify identity
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- Macrophages
  - Usually of normal size with inclusions in cytoplasm.
  - Occasionally enlarged with one or more smaller cells engulfed.
  - Seen in acute inflammatory processes
  - When filled with fat droplets would be called oval fat bodies.
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- WBCs, RBCs, cell debris, bacteria