Conference on leukocytes

VIBS 443/602
BLOOD - DIAGNOSTIC VALUE - MOST EXAMINED

TYPES OF INFORMATION:

IDENTIFY NATURE OF DISEASE
- VIRAL – T LYMPHOCYTES
- BACTERIAL – NEUTROPHILS
- PARASITIC – EOSINOPHILS

FOLLOW THE COURSE OF DISEASE

ALLOWS METHOD TO EVALUATE THE EFFECTIVENESS OF TREATMENT
TYPES OF LEUKOCYTES

GRANULAR LEUKOCYTES
- NEUTROPHILS (POLYMORPHS, PMNs)
- EOSINOPHILS
- BASOPHILS

NONGRANULAR LEUKOCYTES
- LYMPHOCYTES
- MONOCYTES
NEUROPHILS (GRANDULES)

AZUROPHILIC ACID PHOSPHATASE (HYDROLYTIC ENZYMES) PRIMARY LYSOSOMES

SPECIFIC BASIC PROTEIN (PHAGOCYTINS, ANTI-BACTERIAL ACTION)
NEUROPHILS (PMN)

BAND CELLS - IMMATURE RELEASE OF CELLS INDICATIVE OF INFECTION

PHAGOCYTOSIS
- OPOSIN ENHANCED
- NONSPECIFIC

BASIC CELLULAR FUNCTIONS –
RANDOM MOTILITY,
CHEMOTAXIS,
PHAGOCYTOSIS,
KILLING BACTERIA
NEUROPHILS (PMN)

Need to **measure** the **BASIC CELLULAR FUNCTIONS**

- **RANDOM MOTILITY** (measure **movement**)
- **CHEMOTAXIS** (measure **attraction and movement** [e.g., directed movement])
- **PHAGOCYTOSIS** (measure **intake of cells**)
- **KILLING BACTERIA** (measure **killing**)

[Image: Neutrophilic granulocyte]
Considerations for Conference on leukocytes

- How could one determine if a white cell count was correct?
- How can one develop an assay for each of the basic functions?
  - Movement –how to measure movement of clouds?
  - Directed movement - toward high chemical concentration (movement across chambers)
  - Internalization of bacteria – bacteria inside cells not just attached to the surface trypsin can remove
  - Killing of bacteria – dead bacteria do not duplicate
DIAGNOSTIC VALUE of examining blood

LEUKOCYTES (WBC)

% of WBC

NEUTROPHIL  60-70%
LYMPHOCYTE  25%
MONOCYTE    5%
EOSINOPHIL  2-4%
BASOPHIL    0-1%

What does variation from expected counts tell you?