



ASSESSMENT OF THE IPF



Objectives:

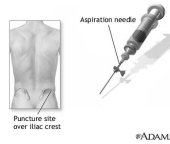
- Quick review of platelet facts
- Define IPF (Immature Platelet Fraction)
- Explain Technology that generates the IPF
- Discuss clinical applications of the IPF
- Marketing the IPF

Platelet facts

- Normal platelet count: 140-400 TH/UL
- A normal platelet circulates for around 10 days
- Approximately 10% of the platelet count is replenished on a daily basis
- Platelets develop and are released into the bloodstream from their parent cell, the bone marrow megakaryocyte

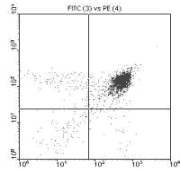
Traditional Method for Assessing Thrombocytopenia

- Bone Marrow
 - Invasive
 - Interpretation takes time and expertise



Traditional Method for Assessing Thrombocytopenia

- Flow Cytometry
 - Limited to select labs
 - Difficult to standardize
 - Costly in time and reagents

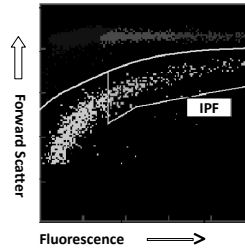


Immature Platelet Fraction

- Newly released platelets- termed "reticulated platelets"- contain mRNA and are larger than normal platelets
- Is the percentage of reticulated platelets of the total platelet count
- Useful in differentiating decreased platelet production in the bone marrow from increased destruction of platelets in the circulation

Sysmex technology

- Fully automated and standardized
- Rapid and non invasive
- Fluorescent flow cytometry using an RNA-binding dye.
- Run in the same channel as the IRF (immature retic fraction)



Diseases associated with decreased platelet counts

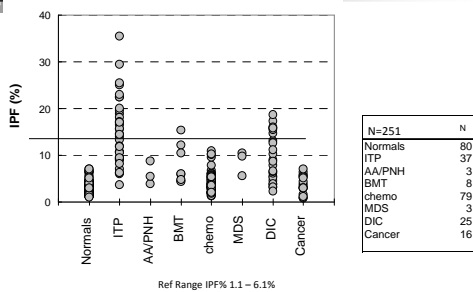
SHORTENED PLATELET SURVIVAL

- Immunologic destruction (ITP)
- Increased platelet use (TTP, HUS, DIC)
- Abnormal distribution (spleen)

FAILED PLATELET PRODUCTION

- Multi-lineage cytopenia; (aplastic anemia, acute leukemia, myelodysplastic, drug-induced)
- Decrease in platelet only- amegakaryocytic

Briggs, C. British Journal of Hematology

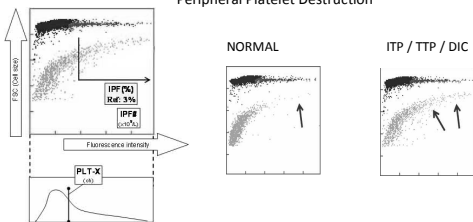


Clinical Utility

- Most significant increase in IPF values
 - AITP (mean 22.3%)
 - Acute TTP (mean 17.2%)
- Patients followed during treatment demonstrated a decrease in the IPF % as the patient's platelet count recovered

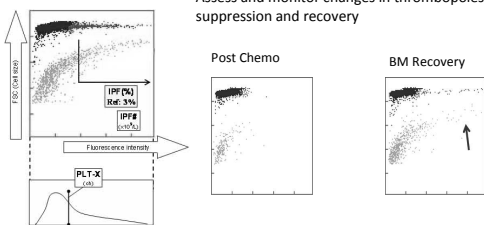
IPF: Clinical Utility

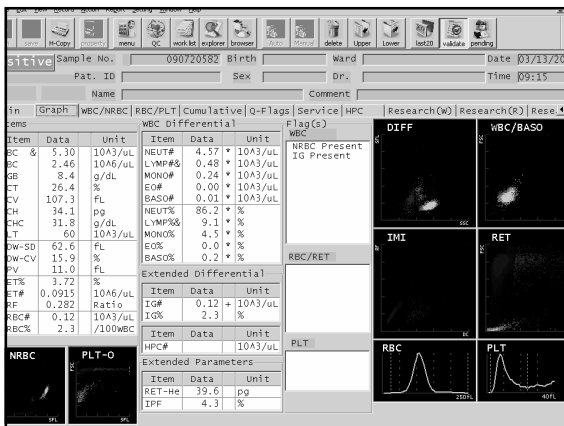
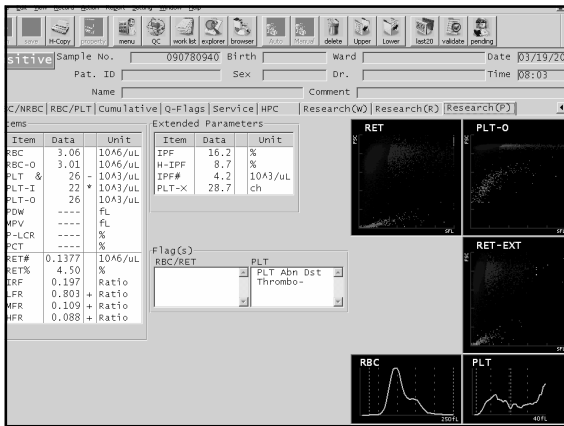
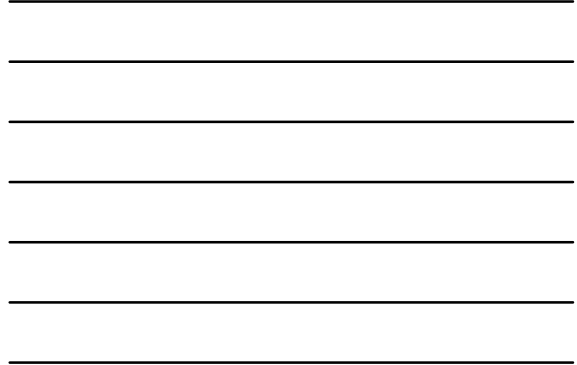
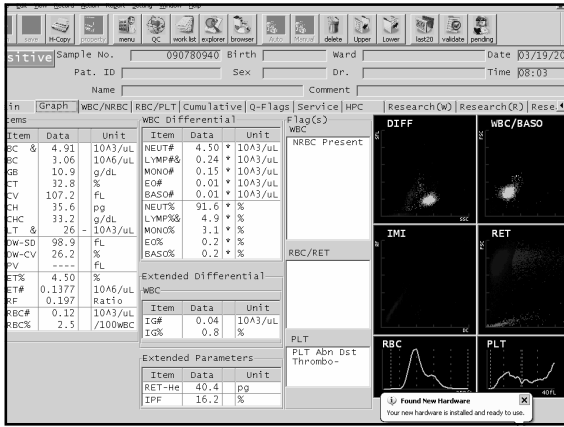
Compensatory Increase in Thrombopoiesis with Peripheral Platelet Destruction

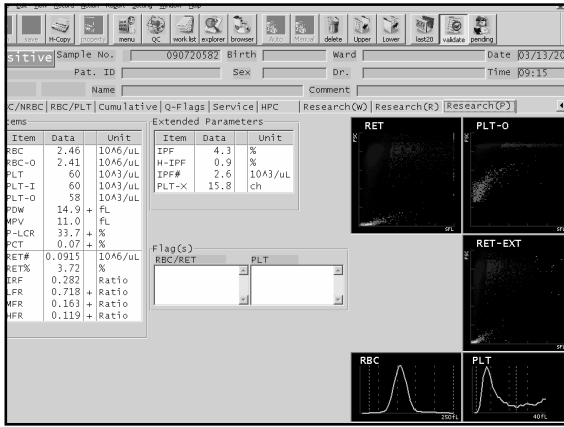


IPF: Clinical Utility

Assess and monitor changes in thrombopoiesis suppression and recovery







Saint Luke's Study of the IPF

- Ability of the IPF to predict platelet recovery following peripheral blood hematopoietic progenitor cell (HPC) transplantation.
- Does the IPF recovery occur significantly earlier than recovery of all other parameters; IRF, PLT ct, ANC.
- Total of 50 patients underwent peripheral HPC transplantation
- Followed the IPF, IRF, PLT ct and ANC daily.

Mean Days until recovery detected

Parameter	Mean Days
IPF	9.4
IRF %	10
PLT	12.5
ANC	13.2

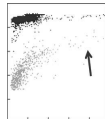
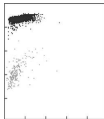
- IPF recovery was defined as a value greater than 7%.
 - IPF recovery was:
 - 3.8 days earlier than the ANC
 - 3.1 days earlier than the PLT ct
 - 0.6 days earlier than the IRF

Future Applications

- In select cases of marrow ablation, monitoring IPF may guide and possibly limit the use of prophylactic platelet transfusions – could avoid platelet alloimmunization.
- May guide therapy with thrombopoietin-like drugs

Transfusion Assessment

- | | |
|----------------------------|----------------------------|
| ■ Low PLT + Low IPF | ■ Low PLT+ High IPF |
| ■ No Production | ■ Production |
| ■ Transfuse | ■ Do Not Transfuse |



Selling the IPF

- Get buy-in from your own physicians
- Attend local Oncology/Hematology/BMT symposia - handouts
- Visit Oncology/Hematology groups – have case studies
- Put test information in your Lab communication – Monthly Lab Letter
- Literature and physician references available.

