Abstract No.-285P

Reticulocyte hemoglobin equivalent (RET-He) as an early predictor of Iron Deficiency Anemia (IDA) in cancer patients.

Introduction

- RET-He measures the amount of hemoglobin in the reticulocytes and indicates red cell hemoglobinization, reflecting the quality of the newly produced reticulocytes.
- It is thought to reflect iron content in reticulocytes and is emerging as an alternative parameter that can be used as a tool for evaluation and sub-classification of different types of anemia, particularly IDA .
- It is a useful parameter which allows the diagnosis of IDA before it manifests clinically in a patient and also for treatment follow-up.
- Therefore, the ability to assess iron deficiency, as part of automated CBC/reticulocyte analysis, may significantly enhance patient management

Problem Statement

- Etiology of CRA is multifactorial it can be due to myelosuppression secondary to chemotherapy, bone marrow failure, chronic inflammation, and/or iron deficiency.
- The goal of the present study was to establish a RET-He cut-off that could rapidly predict iron deficiency.
- The data suggests that RET-He, at a threshold of 32 pg/ cell, may be an important discriminator to rule out IDA in patients with cancer.

Inclusion Criteria

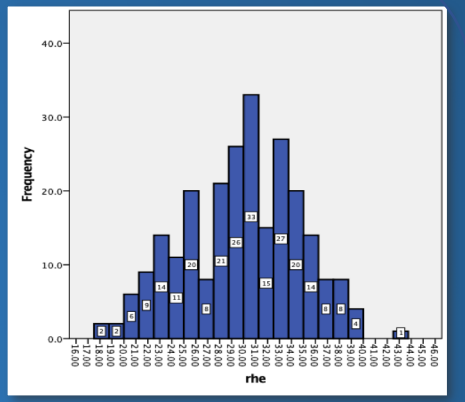
- More then 18 years of age
- Either sex with primary diagnosis of cancer related anemia (CRA) after hematological evaluation,
- ECOG performance status 0-2,
- Hemoglobin <10 gm/dl, Serum Iron <40 mcg/dl, Transferrin Saturation (TSAT) (<20%), with or without ferritin <100 ng/ml

Exclusion Criteria

- Patients in the immediate post-operative period (3 weeks) and/or critically ill,
- Diagnosed with leukemia, macrocytosis, thalassemia,
- Recent history of blood transfusion in past 3 weeks,
- Taking erythropoietin stimulating agents

Results

Characteristic	Male (Mean±SD)	Female (Mean±SD)
No. of patients	88 (35.3%)	161 (64.6%)
Age in years	**61.8 ±10.3**	**54.0 ±12.4**
Hb (g/dl)	8.6 ± 0.81	8.6 ± 0.79
MCV (fl)	85.4 ± 8.0	86.3 ± 7.6
RET-He (pg/cell)	29.7 ± 5	29.8 ± 4.7
Serum Iron (µg/dl)	38.1 ± 16.1	37.8 ± 16.6
Transferrin Saturation %	15.6 ± 6.8	15.2 ± 6.4
Ferritin (ng/ml)	296.5 ± 328.2	418.8 ± 621.5



RET-He Cut-off <30.4 pg	TSAT <20%, serum Iron <40 µg/dL (Protocol Values)	TSAT <30%, serum Iron <40 µg/dL(In house values)
Sensitivity %	67.4	67.8
Specificity %	64.5	68
Negative Predictive Value (NPV)%	61.2	58.6
Positive Predictive Value (PPV)%	70.67	75.9

Conclusion

- RET-He is a readily available parameter on automated hematology analyzers with no additional cost and effort.
- We recommend the incorporation of RET-He in the diagnostic algorithm for the rapid assessment of IDA in the oncology practice as a surrogate marker with cut-off value <30.4 pg which had a PPV of 75%.
- This will negate the requirement of iron biochemistry studies in CRA patients, expedite the process of anemia correction with I.v. iron therapy and further reduce the requirement of additional blood sampling, along with providing cost efficacy to the patient especially in the cost-limited healthcare settings.
- In case of non-responders, a further extensive work up should be performed to delineate the etiology of CRA.