Hemoglobin Levels Pre- and Post-Treatment as a Surrogate for Disease Severity in Early Onset Scoliosis

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Disclosures

None related to this presentation

Background

PFTs difficult in EOS

EOS outcome measures not clear

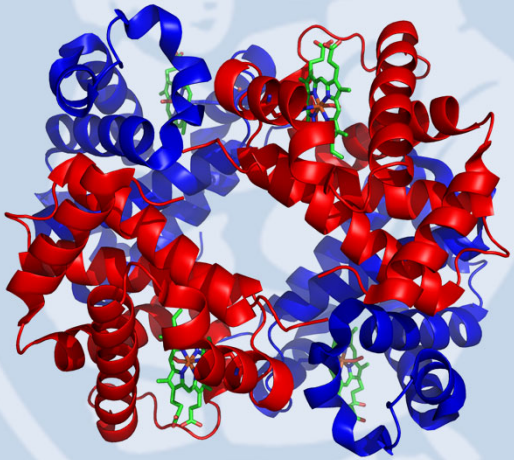
Search for surrogates

-Spine length, lung volume, etc.

Background

Emans et al 2009:
Retrospective review EOS
- -23% prevalence elevated Hgb
- -Significant treatment effect w/ rib based growing construct (n=85)
- -No treatment effect for GR patients (n=53)

Skaggs 2015:
Retrospective review GR patients (n=66)
- -8% elevated Hgb prevalence (z>2)
- -No significant effect with surgery



Study Question

Is Hgb:

1) A good marker of disease severity

2) Useful in assessing effect of treatment in EOS

Methods

Prospective cohort study

Inclusion:

- EOS planned treatment with distraction based construct
- Elevated Hgb (Z score > 1)

Exclusion:

- Previous surgery
- Underlying hematologic disorder

Data

Time Points:

- Pre-implantation
- 6 months
- 1 year

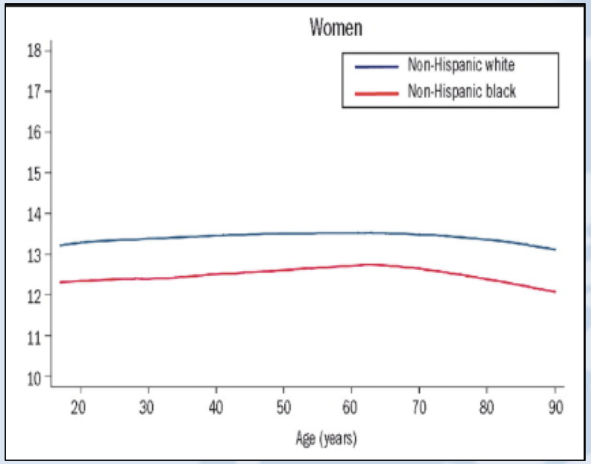
Data Collected:

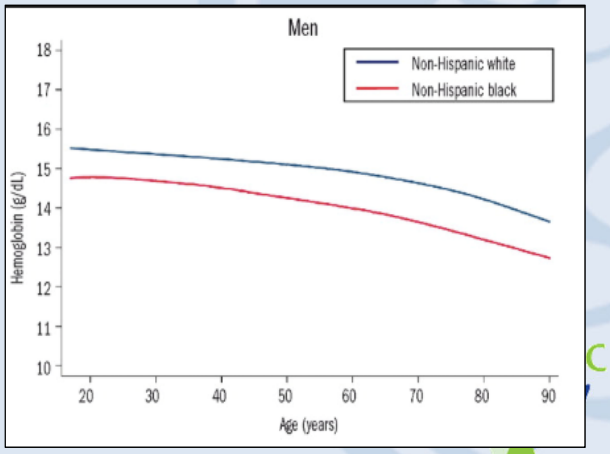
- Age, sex, BMI, diagnosis, comorbidities, surgical history, Cobb angle
- Use of pulmonary support (BiPAP or CPAP, 02)
- CBC, BMP

Hemoglobin

Hgb varies by age

Z score provides standardization





Results

160 patients:

-GR (12%)

-MCGR (33%)

-Rib based growing construct (54%)

Mean age: 6.7 yrs

Results

26/160 (16%) elevated Hgb

	Elevated	Not Elevated	
Age	4.3 +/- 2.9	7.1 +/- 2.9	**P<0.001**
GR	3 (12%)	16 (12%)	**p<0.01**
MCGR	2 (8%)	49 (37%)	
Rib Based	21 (81%)	64 (48%)	
Unknown	0 (0%)	5 (4%)	

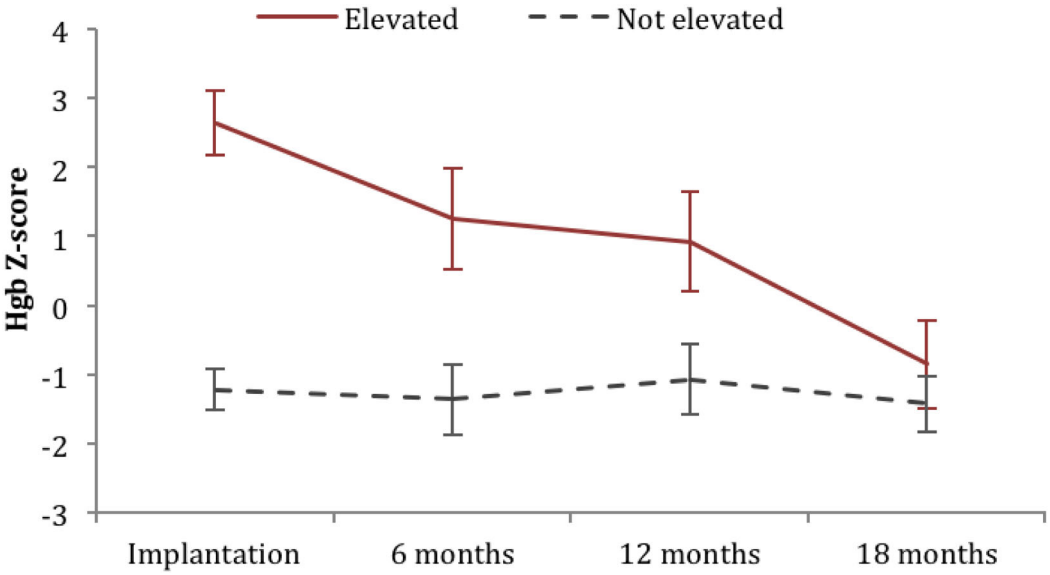
Response to Treatment

Elevated Hgb preop:

-Hgb decreases over time

Normal Hgb preop:

-No change in Hgb



Limitations

Preliminary data

Attrition rate

Need to correct for confounders:

-Malnourishment, chronic respiratory acidosis, etc.

Conclusions

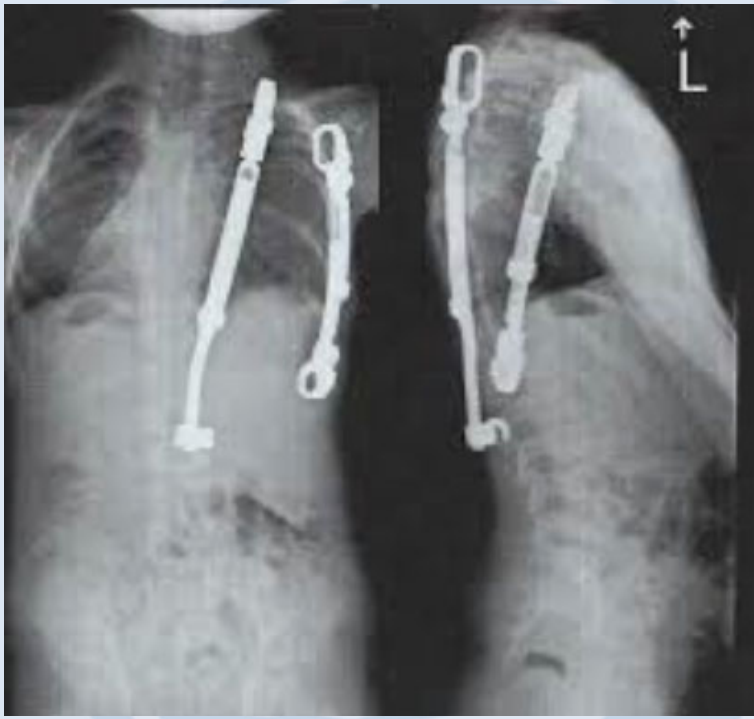
Elevated Hgb in small percentage of EOS

Younger, sicker patients?

Chest based deformity?

Elevated Hgb corrects after surgery

May be useful in small subset of patients



Thank you!