



What is HTS and How is it Different Than Scar and Keloid?

- What are accurate and specific characteristics of HTS?
- Are there specific blood or tissue markers for HTS?
- How can we best educate clinicians about the clinically defined characteristics of HTS?
- Who should be targeted for such educational programs?

What Do We Study to Understand Excess Scar after Burns?

No relevant animal models (seems a tad harsh to me)

Must biopsy patients

Continuously changing scar

Operative interventions when scars
are in late stages

CELL PHENOTYPE CHANGES

WHAT WE DO NOT KNOW

- What changes cell phenotype?
 - Epigenetic, altered signaling systems, microenvironment
- HTS **SLOWLY** resolves. Why slow and are those events controllable?
- What are the specific inducers for excess collagen synthesis and matrix contraction?

Pathophysiology of HTS

TGF β UPREGULATION

What researchers do not know

- What causes TGF β upregulation, increased signal or altered responses?
- What specific signals for increased TGF β are increased?
- Is there a breakdown of normal TGF β regulation
- Are TGF β regulatory proteins present? Functional? Relevant?
- Are there other inducers of matrix and contraction?

TGF β UPREGULATION

What clinicians want to know

- How to inhibit, scavenge, prevent synthesis, block, minimize, oppose TGF β actions
- Same problem for all fibrotic diseases, pulmonary and kidney fibrosis, scleroderma

WHAT WE DO NOT KNOW

- What can epithelial cells produce that regulates collagen synthesis?
- Can this product independently limit scar symptoms?
- Are proteases part of HTS regulation?
- Are differentiation or barrier effects important?

WHAT WE DO NOT KNOW

- What regulated the remodeling of tissue within and adjacent to the burn wound?
- What are the mechanical signals that regulate tissue performance?
- How is the micro-structure of burn scar different than normal skin and scar?
- Does an altered microenvironment cause changes in cell function, TGF β and the rest?

WHAT WE NEED TO DO NOW

- Many fundamental questions about scar physiology can be defined.
- How can these results be translated into clinically useful interventions?
- How to fund research into high impact, but low frequency treatments?

Unresolved Features of Hypertrophic Scar following Thermal Injury

- definition of HTS vs normal skin, mature scar and keloid
- diagnosis and scar severity
- prevalence and socioeconomic impact
- pathophysiology
- treatment

How do you measure the severity of HTS and response to treatment?

Prevalence of HTS

Pathophysiology of HTS Formation

What are the important features of fibroblasts in hypertrophic scar?

What are the important fibrogenic growth factors in HTS?

What is the role of T cells in HTS
and how do we control their
effects?

What is the role of bone marrow hematopoietic stem cells and mesenchymal stem cells in HTS?

Are fibrocytes important in the development of HTS?

What are the important
inflammatory cytokines
and receptors in HTS ?

What is the role of other potential important cells in HTS?

What is the optimal form of
treatment for HTS?

What is the best animal models of
HTS to assess new treatments?

What are useful antifibrogenic agents for HTS?



Dr. Garner's nice example

You will note slide is 14
years old

Where oh where is the
progress?