CD44 EXPRESSION IS DECREASED IN LICHEN SCLEROSUS

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INTRODUCTION & OBJECTIVE

INTRODUCTION

- Lichen sclerosus (LS) is an idiopathic chronic inflammatory disease which causes severe urethral stricture disease in affected men
- Decreased CD44 expression has been observed in female LS but is uncharacterized in men
- Reduced CD44 expression results in impaired epithelial barrier function through altered tight junctions which may drive chronic inflammation and fibrosis in LS

OBJECTIVE

To test the hypothesis that epithelial CD44 expression is decreased in human LS compared to non-LS tissues

RESULTS

- CD44 expression is decreased in LS tissues
- Diminished CD44 expression is associated with altered tight junctions resulting in impairment of epithelial barrier function in other diseases
- This suggests that increased epithelial permeability may drive chronic inflammation in LS through increased exposure to chemical and immunogenic irritants
- Future directions will characterize alterations in tight junction protein expression in LS and any modulating effect of corticosteroid administration

METHODS

- Subject identification
  - Patients undergoing vulvar biopsy, circumcision, urethral biopsy, or urethroplasty with available surgical pathology
  - Excluded active malignancy
  - Re-reviewed with GU pathologist to confirm LS diagnosis

- Immunohistochemistry
  - Quantify CD44 expression in epithelial and stroma

- Image Analysis
  - 3 ROIs per slide, segmented into stroma and epithelium, CD44 expression quantified as mean optical density

- Statistical Methods
  - Mean OD reflecting CD44 expression were compared in each histologic compartment between LS and non-LS patients

DISCUSSION

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Figure 1. Images of multiplexed immunohistochemical staining to quantify CD44 expression in vulvar, urethral, and foreskin tissues. (A-F) Representative photomicrographs (20x) of vulvar (A), urethral (C), and foreskin (E) tissues without LS compared to the same tissue types with LS (B, D, F). LS tissues display typical pathologic features including epidermal atrophy, loss of dermal rete pegs, dermal collagen deposition, and inflammatory infiltrate (B, D, F). There is also variable reduction in CD44 staining shown in the LS compared to non-LS samples. (G) Quantitative comparison of mean optical density of CD44 staining in epithelial and stromal tissue compartments. Vulvar samples with LS demonstrate reduced CD44 staining in both epithelial and stromal compartments compared to non-LS samples. Urethral samples with LS demonstrate reduced CD44 staining in the epithelial compartment compared to stroma, while foreskin samples with LS show reduced CD44 staining in both epithelial and stromal compartments compared to non-LS samples. Asterisks indicate statistical significance at p<0.05. LS = lichen sclerosus