Evening Specialty Conference
Case #2

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ACCME/Disclosures

The USCAP requires that anyone in a position to influence or control the content of CME disclose any relevant financial relationship WITH COMMERCIAL INTERESTS which they or their spouse/partner have, or have had, within the past 12 months, which relates to the content of this educational activity and creates a conflict of interest.

Dr. Anthony Chang declares the following conflict(s) of interest to disclose:

Alexion Pharmaceuticals – speaker bureau
Elsevier - royalties

History

• 42 year-old African-American female with hemoglobin SC disease
• Experienced many sickle cell crises when younger
• Last crisis at age 20 involved cerebrovascular accident and seizures
  • Developed sickle cell retinopathy
• Age 26 – hemoglobin electrophoresis
  • 46.8% Hgb S
  • 41.6% Hgb C
• Age 34, Creatinine = 0.5-0.8 mg/dL
• Age 36, Cr = 1.1
• Age 37, Cr = 1.3
• Age 38, Cr = 1.5
• Age 42, Cr = 1.7 (now)
• 24-hr urine = 1.25 g
• Urinalysis: 1+ blood
• ANA+ (1:320), dsDNA/ANCA -
Final Diagnosis

• Sickle cell nephropathy with peritubular capillary and vasa recta thrombi

• Modest mesangial IgA deposition

Sickle cell nephropathy

• Hgb S due to Glu → Val substitution at 6th aa
• Hgb C due to Glu → Lys
• HbSS = sickle cell anemia, most severe
  • 4.2-11.6% develop end-stage renal disease
• HbSC and HbS/b-thalassemia, intermediate
  • 2.4% HbSC develop end-stage renal disease
• HbAS = sickle cell trait
Sickle cell nephropathy

- Pathologic features
  - Global / segmental glomerular scarring
  - Glomerular hypertrophy
  - Duplication of GBM
  - Hemosiderosis
  - Interstitial fibrosis / tubular atrophy
  - Thrombi / loss of peritubular capillaries / vasa recta
PTC BM Multilayering

• Widely studied in antibody-mediated rejection
• Few studies of native kidneys

Peritubular Capillaries in Chronic Renal Allograft Rejection: A Quantitative Ultrastructural Study

BÉLA IVÁNYI, MD, HANAN FAHMÝ, MD, HOLLY BROWN, MD, PÁL SZENCHRÁDSZKI, MD, PHIL F. HALLOIAN, MD, AND KIM SOLEZ, MD

Human Pathology 2000; 31: 1129-1133

Found PTC BM alterations in 3 (6%) of 56 native kidney biopsies

PERITUBULAR CAPILLARY BASEMENT MEMBRANE REDEPOSITION IN ALLOGRAFTS AND NATIVE KIDNEY DISEASE

A COMPARATIVE STUDY OF 26 CHRONICALLY RENAL DISEASES

Transplantation 2001; 71: 1390-1393

Found PTC BM alterations in 13 (9%) of 143 native kidney biopsies

Specificity of Intertubular Capillary Changes: Comparative Ultrastructural Studies in Renal Allografts and Native Kidneys

Cinthia B. Drachenberg, MD, Eileen Steinberger, MD, Edward Hoehn-Saric, MD, Alejandro Heffes, MS, David Klassen, MD, Stephen T. Bartlett, MD, John C. Papadimitriou, MD, PhD

Ultrastructural Pathology, 21:227-233, 1997

• Found PTC BM alterations in 7 (8%) of 85 native kidney biopsies
  • Lupus nephritis
  • Nephrosclerosis
  • Cryoglobulinemic GN
  • MPGN
  • Crescentic GN

Diagnostic Significance of Peritubular Capillary Basement Membrane Multilaminations in Kidney Allografts: Old Concepts Revisited

George Lipps,1,2 Harsharan K. Singh,1 Vinai K. Deswal,1 Add M.E. Gaisi,3 Tomasz Kudowski,4 and Volker Naicker5

Transplantation 2012; 94: 620-624

• Found PTC BM alterations in 76% of 360 native kidney biopsies
  - Defined as 3 or fewer layers
Teaching Point

• PTC or vasa recta thrombi – easy to miss
  • Suggestive of sickle cell disease
• PTC BM multilayering in sickle cell nephropathy
  • Likely underrecognized