Inside Job

A previously healthy 39 year-old woman was referred to nephrology because she was found to have proteinuria during evaluation for low back pain. Vital signs were normal. She had malar erythema ("rosacea" by history). Blood shows: sodium 143; potassium 3.5; chloride 115; bicarbonate 17; glucose 79; BUN 10; creatinine 1.1; Calcium 8.2; Phosphate 1.4; uric acid 0.8. Serology is negative except for anti-smooth muscle antibodies; complement is normal. Urine shows: specific gravity 1.020; pH 5.0; protein ++; Blood +++ (collected during menstruation); glucose +++; a 24-hour collection containing 1900 cc showed creatinine 67.4 mg/dl; protein 169 mg/dl; phosphate 39.6 mg/dl.

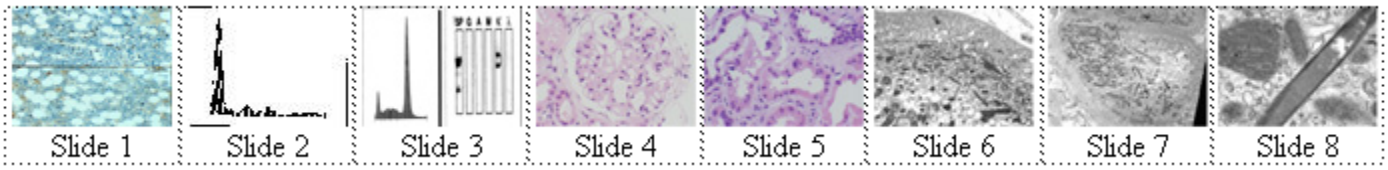
1. Calculate the GFR.
2. Estimate the 24 hour protein excretion.
3. Calculate the fractional excretion of phosphate. Is it appropriate?

Bone scan, bone survey and lumbosacral spine x-rays showed degenerative changes in the sacroiliac, lumbar spine, wrist, knee, ankle and feet consistent with non-specific arthritis. There was a lesion in the right 6th rib that was biopsied and showed osteosclerosis with a mildly hypercellular marrow with excess kappa-staining plasma cells "suggestive of plasma cell dyscrasia." (figure 1).

Serum and urine protein electrophoresis and urine immunofixation were performed and are shown in figures 2-3.

A renal biopsy was done.

Pathology Report for Biopsy



Renal biopsy showed a tubular injury pattern (slides 4-5) with intracellular crystals (slides 6-8).

4. What is the pathologic diagnosis? (select from List 2)