Multiple myeloma consistently is preceded by precursor states, which often are diagnosed incidentally in the laboratory. This case report illustrates the clinical dilemma of progression from precursor to full malignancy. The article also discusses future directions in management and research focusing on myelomagenesis.

Case Report

In the late 1990s, Mr. A, an otherwise healthy 65-year-old Caucasian man, underwent a regular health check-up. As part of the blood work, serum protein electrophoresis was conducted. During the work-up, a monoclonal protein was detected and confirmed with immunofixation electrophoresis. The monoclonal protein was defined as immunoglobulin-G kappa with a concentration of 1.25 g/dl; the quantitave uninvolved immunoglobulin levels all were found to be normal. In addition, the complete blood count revealed normal hemoglobin, calcium, and creatinine levels. Mr. A was diagnosed with MGUS.

Given the features of the serum protein abnormalities, Mr. A was recommended to have annual follow-up appointments to monitor his blood work. For several years, his monoclonal-protein level stayed in the range of 1–2 g/dl and he did not have other laboratory abnormalities or symptoms.

In early 2009, Mr. A’s monoclonal-protein level increased to 3.2 g/dl. He underwent a bone marrow biopsy with immunohistochemistry (CD138, kappa and lambda stains). Results of the biopsy showed 30%–40% plasma cells with kappa light-chain restriction. In addition, flow cytometry of the bone marrow aspirate showed that more than 99% of the plasma cells were abnormal. Serum calcium and creatinine levels were within normal limits. Albumin level was 5.2 g/dl, and the beta-2-microglobulin level was 2.5 mg/L. Skeletal survey was negative for lytic lesions. Taken together, the observations changed Mr. A’s diagnosis from MGUS to smoldering multiple myeloma.

After diagnosis, Mr. A was monitored every two months and assessed with serum protein electrophoresis, immunofixation electrophoresis, and routine laboratory tests (including calcium, albumin, complete blood count, and creatinine). The monoclonal-protein concentration increased by 0.3–0.5 g/dl at each visit, whereas calcium levels gradually increased and