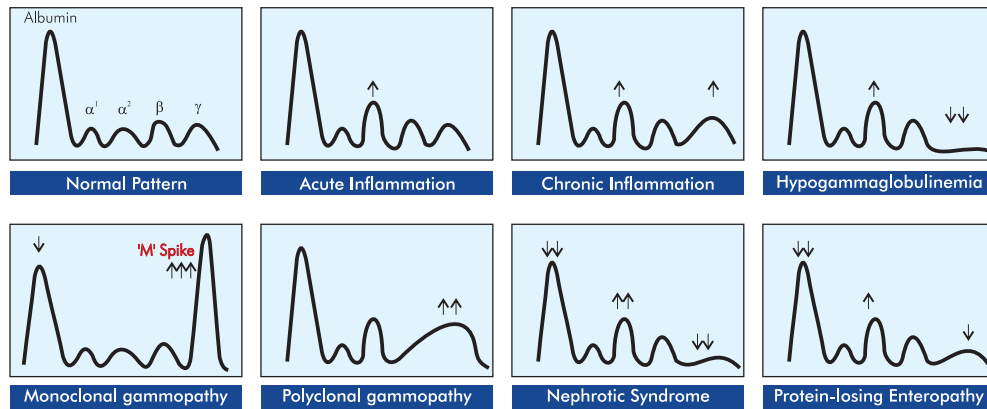


Serum Electrophoresis - Basics

Serum protein electrophoresis (SPEP) is the first line that measures major blood proteins by separating them into five distinct fractions: albumin, α_1 , α_2 , beta and gamma proteins. This test is quick, comprehensive evaluation that serves as baseline investigation and subsequent studies including identifying patients with multiple myeloma and other disorders. Sometimes, the results of this examination are difficult to interpret. Commonly recognized electrophoretic patterns are summarized in the following table.

Pattern	Protein Changes	Conditions
Acute Inflammation	Normal or Decreased Albumin Increased α^1 &/or α^2 Fractions	Acute infection and inflammatory disorders
Chronic Inflammation	Normal or Decreased Albumin Increased α^1 Fraction or α^2 Fraction Increased γ Globulin	Autoimmune diseases, chronic liver disease, chronic infection and cancers
Hypogammaglobulinemia	Normal or Decreased Albumin Decreased γ Globulin	Lymphoproliferative disorders, inflammatory bowel disease and congenital immunodeficiencies
Polyclonal gammopathy	Increased γ Globulin	Autoimmune disease, infections and Liver diseases
Monoclonal gammopathy	Normal or Decreased Albumin Increased γ Globulin	Myeloma, macroglobulinemia, CLL, lymphoma etc.
Protein losing disorder	Decreased Albumin Decreased α^1 Fraction Increased α^2 Fraction Increased β Fraction	Nephrotic syndrome, exudative skin disorders & gastroenteropathies



About Multiple Myeloma (Presence of 'M' Band)

This is a type of blood cancer of plasma cells. Although it predominantly affects the elderly population, multiple myeloma can also rarely present in much younger patients. When it presents in younger patients, multiple myeloma is noted to have a more aggressive disease course; however, a good response to therapy as observed in younger patients can effectively thwart disease progression. A timely diagnosis therefore remains imperative in yielding favorable disease outcomes in this population.

This disease involves Bones, immune system, kidneys and RBC count. It usually presents as Pain in back/bones, Anemia, Fatigue, Loss of appetite, Constipation & Weight Loss and Repeated Infections. Common Laboratory findings include elevated serum Total Proteins, Calcium level, Anemia, presence of 'M' Protein (M Band) in Serum Protein Electrophoresis, Bence Jones proteins in urine.

All suspicious cases should undergo a detailed blood workup including confirmation by immunofixation technique, estimation of Kappa Lambda levels and ratios, Bone Marrow Examination and Radiological Evaluation.

