

The Cytokines in Endocrine Dysfunction of Plasma Cell Disorders

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Abstract

Monoclonal gammopathies (MG) are classically associated with lytic bone lesions, hypercalcemia, anemia, and renal insufficiency. However, in some cases, symptoms of endocrine dysfunction are more prominent than these classical signs and misdiagnosis can thus be possible. This concerns especially the situation where the presence of M-protein is limited and the serum protein electrophoresis (sPEP) appears normal. To understand the origin of the endocrine symptoms associated with MG, we overview here the current knowledge on the complexity of interactions between cytokines and the endocrine system in MG and discuss the perspectives for both the diagnosis and treatments for this class of diseases. We also illustrate the role of major cytokines and growth factors such as IL-6, IL-1 β , TNF- α , and VEGF in the endocrine system, as these tumor-relevant signaling molecules not only help the clonal expansion and invasion of the tumor cells but also influence cellular metabolism through autocrine, paracrine, and endocrine mechanisms. We further discuss the broader impact of these tumor environment-derived molecules and proinflammatory state on systemic hormone signaling. The diagnostic challenges and clinical work-up are illustrated from the point of view of an endocrinologist. Plasma cell disorders are characterized by disproportionate proliferation of single clones of B cells that give rise to both structurally and electrophoretically homogeneous (monoclonal) immunoglobulin's (either intact or subunits only) in body fluids such as urine and serum. Their classification is made based on both clinical symptoms and coexisting pathological conditions, including monoclonal gammopathy of undetermined significance (MGUS), malignant plasma cell disorders (such as multiple myeloma (MM)), progressive and symptomatic heavy-chain diseases, and nonhereditary primary systemic amyloidosis. Depending on the type of plasma cell disorders, the treatment strategy varies.

Received: August 07, 2022; **Accepted:** August 14, 2022; **Published:** August 21, 2022

Biography

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