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Commentary

Role of Immunoglobulins in Plasma Cell Disorders

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DESCRIPTION

Myeloma and AL amyloidosis are plasma cell disorders. Plasma cells are usually immunoglobulin-producing cells, antibodies that help fight infection and support the immune system. Plasma cell disease is a type of blood cancer that can make plasma cells malignant, damaging the bones, kidneys, heart, bone marrow, and immune system, making patients sick. Plasma cell disorders include multiple myeloma, systemic light chain (AL) amyloidosis, and monoclonal immunoglobulin deposition. A hallmark of plasma cell disease is the measurement of antibody proteins produced by malignant plasma cells in blood and urine. In each patient, these cells have an identifiable immunoglobulin signature, usually a "heavy chain" such as immunoglobulin G or A (IgG or IgA) and a "light chain" of either kappa or lambda produces intact immunoglobulin within 20% of patients with myeloma and the majority of patients with AL amyloidosis only if the light chain is produced.

We follow these signature proteins during therapy because as the number of malignant cells decreases, these proteins decrease as well, showing that the patient is responding to treatment. When we can no longer identify these signature proteins in a patient, a complete response has usually been achieved. A complete response is not a cure. Most patients eventually relapse and require further treatment 4-5 years after initial diagnosis and treatment. The recurrence of occurs because the patient has very few residual lesions, even after the protein characteristic of blood and urine has not been found. This is called a minimal residual disease. Currently, there are clinical research tests of minimal residual disease to help determine the risk of recurrence in each patient. The genetics of plasma cell disease and the depth of complete response can be assessed by determining the presence of minimal residual disease. The presence or absence of minimal residual disease determines how long an individual patient's response lasts. The genes of the plasma cell disease and the amount or burden of the plasma cell disease at diagnosis are major factors that determine how long the complete response can be maintained.

Much work remains, but as a result of focused clinical trials, comparative analysis of patient outcomes, and translational research investigating malignant plasma cells in the bone marrow, treatment and understanding of plasma cell disease has been available for the past 20 years. Patients most commonly experience damage to the kidneys, bones, and bone marrow due to plasma cell disease, but patients can experience heart damage at the time of diagnosis or in the event of recurrence. If diagnosed, patients with AL amyloidosis and heart injury must be treated promptly and effectively, and in the case of recurrence, patients with recurrent heart injury or recurrent myeloma and new heart injury are also diagnosed and promptly must be treated. The injury is often reversible, but in some patients it may be advanced enough to require aggressive heart surgery, including a heart transplant.

Bone and kidney damage can be undone if detected early. A small number of patients may require orthopedic surgery, such as total hip arthroplasty. The general principle of all plasma cell diseases is that early diagnosis and treatment can control plasma cell disease, reverse organ damage, and thereby restore the patient's quality of life and normal activity levels is Reactive myeloid plasmacytosis has many causes, including infections, malignant tumors, inflammation, Castleman disease, iron deficiency, hemolytic anemia, true diabetes, liver cirrhosis, and streptoxine. This causes the plasma cell damage and also its main causes are hyperparathyroidism, vitamins deficiency, or toxic light chains secreted by malignant plasma cells. Reduced production of other immunoglobulin's and reduced T cell response. In multiple myeloma, overgrowth of bone marrow plasma cells can congest normal hematopoietic cells and reduce blood cell counts. This can lead to anaemia at first, or the first treatment will probably be a combination of different types of medications. The care team may refer to this treatment as chemotherapy or chemotherapy, but it also includes other types of anticancer drugs. They work in different ways to kill myeloma cells.

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