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IgG Kappa Monoclonal Gammopathy Presenting As Constipation: A Case Report

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Abstract: ***Background: Monoclonal gammopathies reflect conditions in which abnormal amounts of immunoglobulins are produced by a clone that developed from a single pro-B germ cell. Monoclonal gammopathies may reflect a disease process, such us multiple myeloma. These diseases may be difficult to diagnose because they affect many tissues and exhibit nonspecific symptoms. Objective: To present a case of monoclonal gammopathy with constipation as one of the manifestation. Case Illustration: A 58 years old male was admitted to the hospital due to constipation and abdominal pain for 10 days, fatigue, weight loss and back pain. Blood test showed anemia, leucopenia, thrombocytopenia, markedly high ESR and hypercalcemia. Serum protein electrophoresis showed monoclonal increased in β 2 globulin and suggestive of monoclonal gammopathy. Blood and urine immunofixation showed monoclonal gammopathy IgG kappa. Magnetic resonance imaging (MRI) of lumbal showed compression fracture of 12th vertebrae thoracal to 5th lumbal vertebrae with bulging disc. Bone mass density showed osteoporosis. Based on the result, patient was suspected to have multiple myeloma, but due to refusal of the patient, further evaluation such as bone marrow biopsy was not done. Discussion: Constipation may be overlooked as one of the symptoms of monoclonal gammopathy. Upper lumbar vertebra is linked to large bowel movement, and although the sensoric and motoric examination of the patient is normal, but possibly due to compression fracture and bulging disc in lumbar leads to constipation. Conclusion: It suggested that on practical basis diagnosis of MG should be considered in elderly patients presenting with colitis.***

Keywords: monoclonal gammopathy, immunoglobulin, constipation, multiple myeloma

1. Introduction

Monoclonal gammopathies (MG) reflect conditions in which abnormal amounts of immunoglobulins are produced by a clone that developed from a single pro-B germ cell.[1] Monoclonal gammopathies may reflect a disease process, such us multiple myeloma (MM) or be benign.[1–3] While the etiology of MG remains unknown, risk factors such as advanced age, family history, male gender and environmental factors have been present.[3] According to the United States Surveillance, Epidemiology and End Results (SEER), the incidence of MG is 6.1/100,000 people per year and increases to 30.4/100,000 people per year in those older than 65 years.[3] There are five classes of antibodies such as IgG, IgA, IgM, IgD, and IgE.[1] Each basic unit is a monomeric antibody consisting of four chains: two heavy chains, providing class specificity, and two light chains, k (kappa) or l (lambda).[1] Definitive diagnoses of these conditions are based on clinical criteria, laboratory testing, and biopsy.[1] These diseases may be difficult to diagnose because they affect many tissues and exhibit nonspecific symptoms, such as fatigue, back pain or even diarrhea and constipation.[1,2]

2. Objectives

To present a case of monoclonal gammopathy with constipation as one of the manifestation.

3. Case Illustration

A 58 years old male was admitted to the hospital due to constipation and abdominal pain for 10 days, fatigue, weight loss (3 kilograms in the last 10 days), and back pain. On clinical examination he was underweight. He had a history of hypertension. His blood pressure was 180/104 mmHg, with heart rate 98 times per minute. Blood test showed anemia, leucopenia, thrombocytopenia and markedly high erythrocyte sedimentation rate (ESR) (table 1).

Rectal examination was normal. Abdominal ultrasound was normal and patient was managed with laxative. Further evaluation was made due to very high ESR. Peripheral blood smear showed anisocytosis, normochromic normocytic, erythrocyte agglutination (++), leucocyte and thrombocyte appears low but normal morphology. Serum protein electrophoresis showed monoclonal increased in β 2 globulin and suggestive of monoclonal gammopathy (table 2, figure 1).

Table 1: Blood Test Results

Blood Test	Value	Normal Value	Interpretation
Hemoglobin	5.0 g/dL	12.0 - 16.0	Low
Hematocrite	15.6 %	37.0 – 47.0	Low
Leucocyte	3.9 x 10^3/uL	4.0 – 10.0	Low
Trombocyte	128 x 10^3/uL	150 - 400	Low
Reticulocyte	0.62	0.5 – 1.5	Normal
CRP	31.2	0 – 5.0	High
LED	148 mm	0 – 20	High
SGOT	18 U/L	5 – 34	Normal
SGPT	6 U/L	< 55	Normal
Protein total	12.5	6.0 – 8.0	High
Albumin	2.8	3.5 – 5.0	Low
Globulin	9.6	1.5 – 3.0	High
Creatinine	2.1 mg/dL	0.6 – 1.1	High
Natrium	133	135 - 145	Low

Kalium	3.2	3.5 – 4.5	Low
Chloride	98	97 - 111	Normal
Calcium	12.5 mg/dL	8.8 – 10.7	High

Table 2: Serum Protein Electrophoresis

Fractions	%	Normal Value		Normal Value	Interpretation
Albumin	22.9	55.8 – 66.1	2.86	4.02 - 4.76	Low
Alfa 1 globulin	2.4	2.9 - 4.9	0.3	0.21 - 0.35	Low
Alfa 2 globulin	6.2	7.1 – 11.8	0.78	0.51 – 0.85	Low
Beta 1 globulin	2.5	4.7 – 7.2	0.31	0.34 – 0.52	Low
Beta 2 globulin	64.7	3.2 – 6.5	8.09	0.23 – 0.47	High
Gamma globulin	1.3	11.1 – 18.8	0,16	0.80 – 1.35	Low

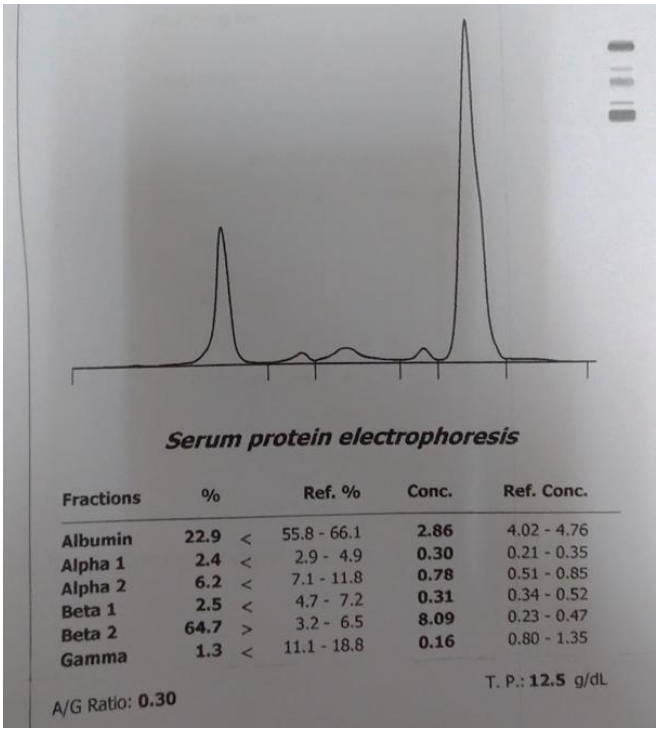

Figure 1: Serum Protein Electrophoresis

Blood and urine immunofixation showed monoclonal gammopathy IgG kappa. Thorax x-ray showed slight cardiomegaly with no lytic lesions (figure 2). Magnetic resonance imaging (MRI) of lumbal showed compression fracture of 12th vertebra thoracal to 5th lumbal bertebra with bulging disc. Bone mass density (BMD) was made and showed osteoporosis (table 3).

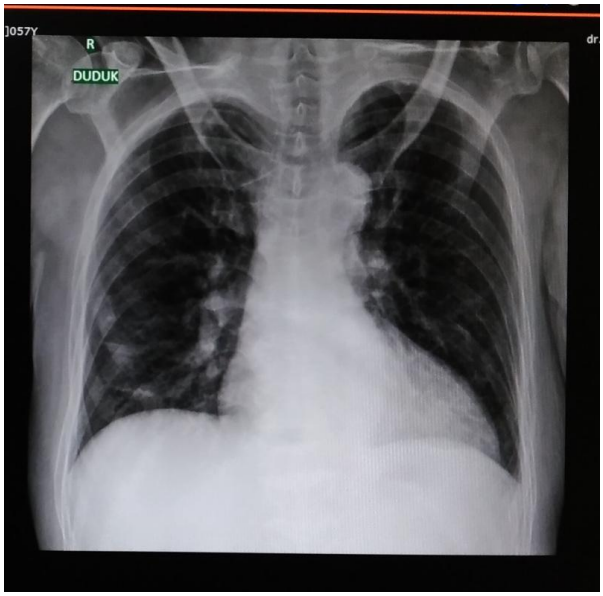

Figure 2: Thorax X-ray

Table 3: Bone Mass Density Result

Bone	T-score	Interpretation
L1-L4	(-) 2.5	Osteoporosis
Total Femur	(-) 2.5	Osteoporosis

Based on the result of the examination, patient was suspected to have multiple myeloma, but due to refusal of the patient, further evaluation such as bone marrow biopsy was not done. Patient was given symptomatic treatment such as packed red cells 1000 cc, antihypertensive agent, oral albumin, laxative and painkiller. After transfusion, patient felt a lot better, his hemoglobin reached 13.1 g/dL and patient asked to go home without wanting further evaluation and further treatment.

4. Discussion

A 58 years old male came with complaint of 10 days constipation, fatigue, weight loss (3 kilograms in the last 10 days), and back pain. Blood test result found that he had anemia, leucopenia, thrombocytopenia, hypercalcemia, renal failure and a very high ESR. Further evaluation such as serum protein electrophoresis was indicated and done. There are several indication for doing serum protein electrophoresis such as suspected MM, waldenstrom's macroglobulinemia, amyloidosis; unexplained peripheral neuropathy; new onset anemia associated with renal failure or insufficiency; back pain; hypercalcemia; rouleaux formation on peripheral blood smear, renal inssuficiency with elevated serum protein; and unexplained pathologic fracture or lytic lesion.[4] Protein electrophoresis serum of this patient showed monoclonal gammopathy with M-protein spike > 2.5 g/dL. Based on the algorithm for monoclonal gammopathy, M-protein spike > 2.5 g/dL must be followed by metastatic bone survey, aspiration and biopsy of bone marrow, C-reactive protein level (figure 3).[4]

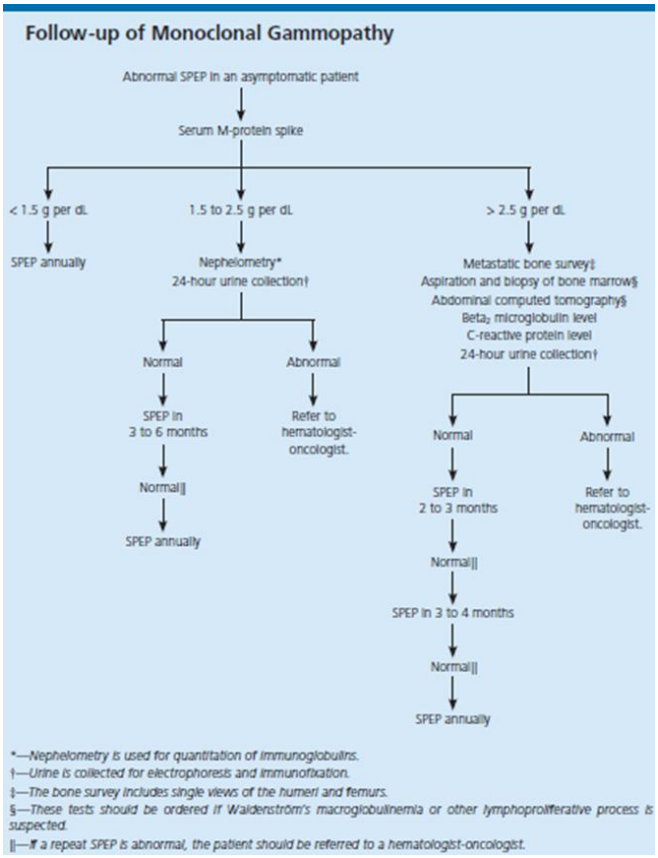

Figure 3: Algorithm for Follow-Up of Monoclonal Gammopathy for General Practitioner[4]

Based on the result of the examination, patient was suspected to have MM, but due to refusal of the patient, further evaluation such as bone marrow biopsy was not done, hence the diagnosis of MM was not made. Diagnostic criteria of MM are clonal bone marrow plasma cells > 10%, presence of serum and/or monoclonal protein and evidence of end-organ damage (hypercalcemia: serum calcium > 11.5 mg/dL or renal insufficiency: creatinin > 2 mg/dL or anemia normocytic normochrom with hemoglobin > 2 g/dL below the lower limit of normal / hemoglobin < 10 g/dL or bone lesions: osteopenia, lytic lesion, pathologic fracture).[5] Definitive diagnosis of multiple myeloma requires 10 to 15 percent plasma cell involvement as determined by bone marrow biopsy.[4]

Anemia is almost invariably present patients with MM, either at diagnosis or as the disease progresses.The pathogenesis of anemia in MM is usually multifactorial, including a component anemia of inflammation due to myeloma itself, bone marrow replacement with malignant plasma cells and anemia of renal failure due to erythropoietin deficit. Thrombocytopenia occurs frequently in patients with malignant MG. The pathogenesis usually involves marrow replacement by myeloma cells.[3] For kidney, the increases in M protein and calcium may overtax the kidney leading to reduced function and/or failure. Bone lesion happen due to activation of osteoclast that leads to bone resorption and inhibition of osteoblast. Hypercalcemia happened due to tumor-induced bone destruction that lead to efflux of the calcium into the blood and due to renal insufficiency, the capacity of the kidney to clear excess calcium load decreased.[6]

Constipation is one of most common symptoms and may be overlooked as one of the symptoms of monoclonal gammopathy, but due to other symptoms such as fatigue, blood test was done and showed a very high ESR which lead to further evaluation such as serum protein electrophoresis. Haeney et al. stated that although MM may involve in several organ systems, symptomatic involvement of the gastrointestinal tract is rare. Multiple myeloma patient has decreased resistance to infection, including that at mucosal surfaces, it is possible that defective local antibody production increases the potential for invasion by microorganism, hence diarrhea and colitis, but rarely constipation. Upper lumbar vertebra is linked to large bowel movement, and although the sensoric and motoric examination of the patient is normal, but possibly due to compression fracture and bulging disc in lumbar leads to constipation.[7]

5. Conclusion

It suggested that on practical basis diagnosis of MG should be considered in elderly patients presenting with colitis.

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