Case Report

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A Case Report of Multiple Myeloma Concurrent with Gastric Adenocarcinoma

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ABSTRACT

Multiple myeloma (MM) has been suggested to associate with other solid tumors. Myeloma or its chemotherapy regimens may be a risk factor for developing primary and secondary malignancies. But the coexistence with other tumors is rare. We report an old patient simultaneously suffering from MM and gastric adenocarcinoma.

Introduction

Multiple myeloma (MM) is characterized by the proliferation of plasma cells in a neoplastic pattern, resulting in various clinical features, including bone pain with lytic bone lesions, impaired hematopoiesis, hypercalcemia, renal failure, and immunoparesis [1]. MM accounts for 1-2% of all cancers and about 17% of hematologic malignancies in the US [2]. The risk of MM increases with aging, and the median age at diagnosis is 66 years. The development of primary and secondary malignancies (SPMs) has been reported after MM treatment. Its mechanism can be multi-causal, including MM tumor microenvironment, treatment-related, and the patient's genetic and environmental factors [3, 4].

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Introduction

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Although MM's coexistence with solid tumors has been reported in several articles, it is not a common finding [4, 5]. A few reports about the association of adenocarcinomas like breast or prostate cancers with MM [6, 7], but the coexistence with gastric adenocarcinoma is rare [8, 9]. The diagnosis of these MM in a patient is critical to selecting the best way for treatment that is also complex. Here, we report a patient with synchronized MM and gastric adenocarcinoma.

Case Presentation

An 83-year-old man presented with complaints of weakness and shortness of breath 3 weeks ago. Also, he complained of abdominal discomfort with no history of weight loss, bleeding, or bone pain. He had no history of medical disease and took no drugs ever. His complete blood count showed hemoglobin (Hb) of 7 g/dL, and he was admitted to the hospital. Laboratory analysis revealed mild hypercalcemia with an elevated erythrocyte sedimentation rate (ESR) and creatinine level (Table 1).

An abdominopelvic computed tomography (CT) scan was done due to the patient's epigastric discomfort. It revealed a 32*47 millimeter polypoid mass at the gastric corpus with penetration to the peri-gastric fat tissue and regional adenopathy. Furthermore, a 60* 66-mil destructive mass was reported at the right inferior pubic bone (Figure 1) and diffuse density changes at lumbosacral bones. There were diffuse low signal intensity foci at lumbar spine Magnetic Resonance Imaging (MRI) at lumbo-sacroiliac bones with no collapsed vertebrae suggestive of metastasis. Whole-body bone scan revealed bone metastasis in bilateral 2nd ribs, lower thoracic and upper lumbar vertebrae, right hip, and ischium. The patient was referred to our hospital for further surveys.

Anemia, hypercalcemia, elevated ESR, and bone lesions suggested MM; consequently, additional laboratory analysis was requested (Table 1). Serum protein electrophoresis and immunofixation demonstrated an M-component of Gamma (3.6 gr/dl) with the spike of IgA and anti-kappa chains. Peripheral blood film showed rouleaux formation and polychromasia. Bone

Table 1. Laboratory data of our patient

Variables	At Presentation	In Our Hospital	Reference Value
Withe blood cells (103/µL)	3.4	4.75	4-11
Red blood cells (106/µL)	2.34	3.23	4.3-5.9
Hemoglobin (gr/dl)	7	9.2	13-17.5
MCV (fl)	88.5	87.6	80-100
Platelets (103/µL)	223	275	140-450
ESR 1st hour (mm/h)	120	125	0-20
Calcium (mg/dl)	10.5	12.4	8.6-10.3
Creatinine (mg/dl)	2.2	3.57	0.7-1.2
Ferritin	64.7	156.3	18.2-341.2
Beta 2 microglobulin (mg/l)	NA	10.29	0.81-2.19
Serum total protein (gr/dl)	NA	8.6	6.6-8.8
Albumin (gr/dl)	NA	3.3	4-4.8
IgG (gr/l)	NA	6.1	7-16
IgA (gr/l)	NA	41.4	0.7-4
IgM (gr/)	NA	0.15	0.4-2.3

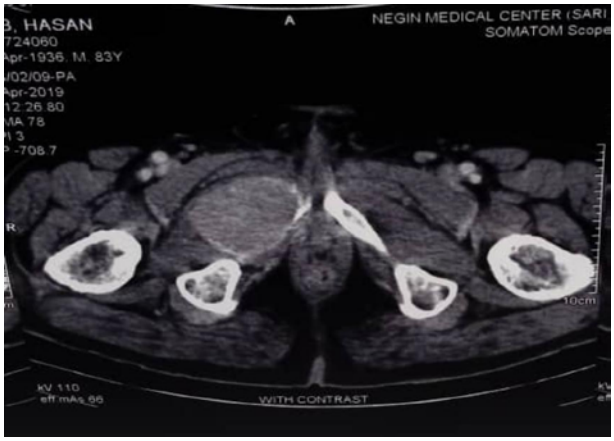

Figure 1. Destructive mass at the right inferior pubic bone

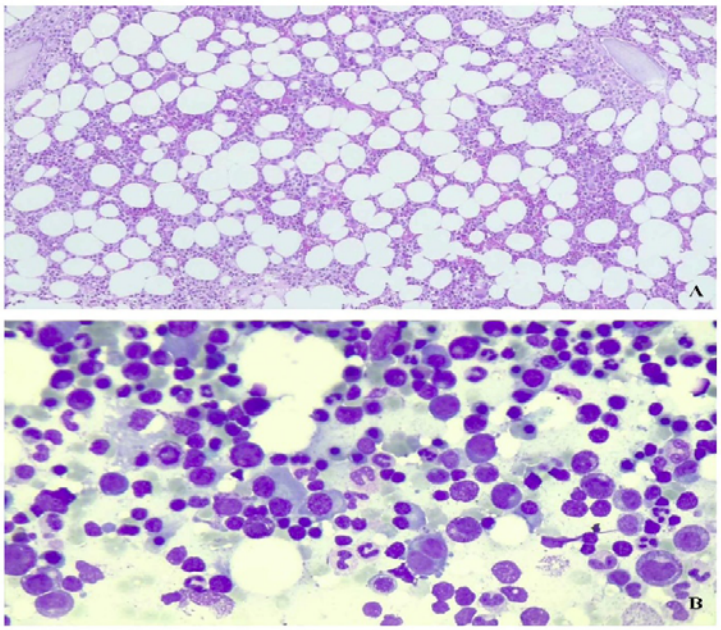

Figure 2. Hematoxylin and eosin (H & E) section

(A) Bone marrow biopsy shows mild hypercellularity (100x); (B) Bone marrow aspiration shows an increased number of plasma cells (400x)

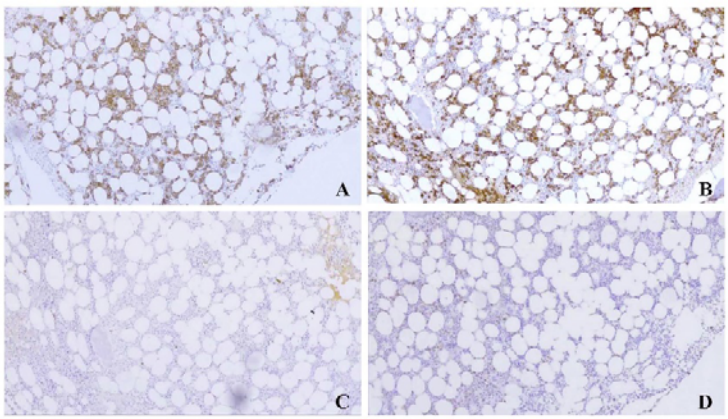

Figure 3. Immunohistochemical staining shows a positive reaction for CD138

(A) and kappa; (B) in plasma cells with a negative reaction for Cytokeratin; (C) and Lambda; (D) (100X)

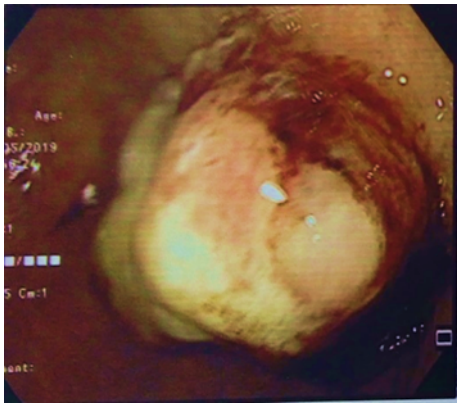

Figure 4. Large fungating mass in the stomach body

marrow biopsy showed mild hypercellularity composed of scattered and some aggregation of atypical cells with eccentric nuclei (Figure 2).

Nuclei in the immunohistochemistry study had a negative reaction for cytokeratin and positive response for CD138. Kappa and lambda staining showed monoclonality of cells (Figure 3). In bone marrow aspiration slides increased number of plasma cells (15% in hematopoietic differential count) was seen as consistent with plasma cell dyscrasia (Figure 2). Esophagogastroduodenoscopy showed a large fungating mass in the body of the stomach (Figure 4), and a biopsy of the mass demonstrated a well-differentiated gastric adenocarcinoma (Figure 5).

This patient was diagnosed to have synchronous MM and gastric adenocarcinoma. He was treated with bortezomib, thalidomide, and dexamethasone (VTD) chemotherapy (bortezomib 3.5 mg d1,8,15, thalidomide 200 mg d1-28 and dexamethasone 40 mg d1,8,15,22). After the first cycle of VTD, the patient was hospitalized due to a fungal infection. He died after 2 weeks.

Discussion

The existence of multiple neoplasias in a patient is not a common finding. It may be in a synchronized or metachronized form. A synchronized pattern is defined as the diagnosis of two malignancies shorter than six months, and if they are longer than 6 months, it is called metachronized malignancies. Multiple primary neoplasias are defined with the following criteria: each tumor must have definite features of malignancy, each malignancy must be distinct, and the chance of metastasis of one malignancy to the other should be excluded. They can be sporadic or a part of the inherited neoplasia syndromes due to germline mutations [10].

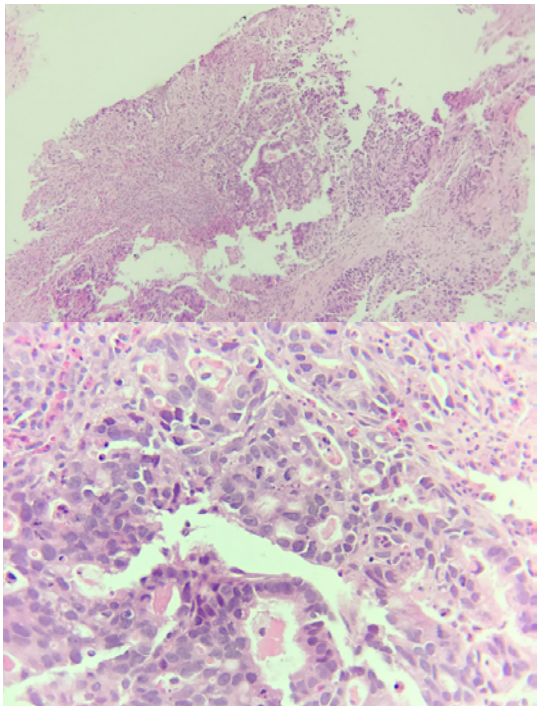

Figure 5. Gastric adenocarcinoma, H&E (A) 100X (B) 400X

The mechanism of multiple primary neoplasias is different. It can result from the exposure of various organs to carcinogens, inherited or acquired gene mutations, tumor microenvironment, cytokine release, or the effect of therapeutic agents [4]. In MM, significant treatment advancements have led to the increasing development of SPM like myelodysplastic syndrome or acute leukemia. But the incidence of synchronized malignancies with solid tumors is infrequent, with an incidence of 3% [3].

Xu et al. reported a case of MM that renal cell carcinoma was diagnosed after 9 months of chemotherapy. They pointed out that clinicians should be alerted to the coexistence of these two malignancies [5]. The role of the interleukin6 level in this coexistence is described in some articles [4]. In another article, Peker A. reported a patient with breast cancer whose bone marrow was infiltrated by breast cancer epithelial cells and MM plasma cells. She was treated with a myeloma chemotherapy regimen [6]. Sporadic case reports have mentioned the association of MM with other carcinomas like prostate, lung, and colon adenocarcinoma [11]. But the coexistence of gastric adenocarcinoma and MM is reported in a few articles. Demir reported an old man with epigastric and bone pain. The diagnoses of both local gastric cancer and MM were performed. He was treated with a myeloma chemotherapy regimen [9].

We diagnosed MM and gastric carcinoma in our patient when he was admitted. Because his solid tumor was localized and myeloma complications were his main complaints, our treatment was focused on MM. But in a patient with good performance status without severe systemic myeloma complications, it would be prudent to resect the localized solid tumor first. But the best chemotherapy regimen in a patient with metastatic solid tumor coexistence with MM is complex and should be decided individualized.

The incidence of multiple neoplasms may be increased because of patients' aging and advancements in the treatment of cancers, so further studies are needed to describe the mechanism of multiple primary malignancies and guide the best guide.

Ethical Considerations

Compliance with ethical guidelines

There were no ethical considerations to be considered in this research.

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Conflict of interest

The authors declared no conflict of interest.

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