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– CASE REPORTS –

Multiple Myeloma and Solid Tumors – a Frequent Rarity –

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Abstract

Objective: *Multiple Myeloma is defined by the proliferation of monoclonal B leukocytes (plasmacytes) in the bone marrow, which results in the production of monoclonal proteins into the urine or blood. With the development of novel therapies, the management of multiple myeloma has improved over time. However, an increasing number of patients now present with a history of solid tumors related to myeloma, which may be observed during the course of the patient's therapy.*

Case presentation: *We present the case of a 53-year-old man who was referred to our department for additional testing to distinguish between multiple myeloma and bone metastases. The patient had a personal history of colonic cancer, which was diagnosed 5 months prior, and osteolytic lesions discovered on the abdominal CT scan. Increased atypical plasmocytic cells were observed in the bone marrow biopsy, and serum IgG kappa monoclonal protein were also positive.*

Conclusion: *The case highlights the potential for concurrent hematologic and solid cancer coexistence.*

Keywords: *Multiple myeloma, Solid cancer, Multiple neoplasms, Osteolytic bone lesions, Colon cancer.*

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Introduction

A class of malignancies known as multiple primary malignant neoplasms can develop concurrently or sequentially in a single patient. They may present as two hematological malignancies, two solid tumors, or one solid tumor with one hematologic neoplasm.7

According to published research, there are only between 0.73 to 11.7% of cases1,2 in which Multiple Myeloma and a solid tumor are associated, indicating that the two malignancies rarely work in tandem.

But as new treatments for malignant neoplasms have been developed over time, more and more patients are presenting with a history of solid tumors in addition to myeloma. This association may be evident in the patient's medical history or during the course of the patient's treatment.7,8

We want to examine how the patient's case was handled in terms of diagnosis, course of treatment, and any side effects that developed from the medication or the patient's disease progression when receiving therapy for both multiple myeloma and a solid tumor.8

Case report

Due to a family history of colonic cancer, a 53-year-old male patient was referred to our hospital's gastrointestinal

department in 2019 for additional testing after presenting with anemia (Hg 8 g/dl).

5 months prior to this presentation, the patient presented with rectal hemorrhaging. A colonoscopy revealed the presence of a tumor located in the transverse colon. A biopsy was performed with immunohistochemistry, positive for cytokeratin 20 (CK20) and negative for cytokeratin 7 (CK7) thus the diagnosis of colonic adenocarcinoma was formulated. Surgery with resection of the tumor was the choice treatment and a colostomy bag was implanted as part of his care. Additional issues developed, including sepsis and fistula. A thoracis, abdominal and pelvis CT scan revealed he has no metastases, however osteolytic lesions were found on T11T12L1 levels. In order to differentiate between multiple myeloma and metastatic colonic carcinoma based on the presence of bone lesions and persistent anemia, the patient was moved to the hematology department.

The blood count showed that he had grade 2 anemia, Hg of 9,6 g/dl (11.2-17.5 g/dl) with normal ranges for leukocytes and thrombocytes and peripheral blood smear: Pro1 Mi1 Mt1 N2 S64 E1 L20 M10. His renal function was found to be normal at 1,07 mg/dl (0,6-1,3 mg/dl) and a creatine clearance of 81,78 ml/min (C-G) with an LDH level of 227 U/L (105-248 U/L). The levels of albumin 3,02 g/dl (3,2–5,2 g/dl) and calcium 8,18 mg/dl (8,6–10,3 g/dl) were marginally below the normal limit, whereas the levels of β2microglobulin 4,44 mg/l (0,7–1,8 mg/l) were high. Serum protein electrophoresis showed values of immunoglobulin of Ig A <0.24 g/l (0.7-4 g/l); IgG 70.1 g/l (7-16 g/l) and IgM 0.322 g/l (0.4-2.3 g/l). The values of free light chain k were 147 g/l (3.3-19.4 g/l) and free light chain λ of 0.64 g/l (5.71-26.3 g/l) with the ratio k/λ of 234 g/l (0.26-1.65 g/l). The M spike value was of 5.6 g/dl. Urinary protein immunofixation was negative.

Whole-body CT scan showed many osteolytic lesions, a 14/10 mm S4 plasmacytoma, and a 16/8 mm right scapula plasmacytoma were discovered. The bone marrow biopsy revealed a 60% plasmocytic infiltration with CD 138 marker positive and no bone metastases. Fish studies were done, and the results for del17p, t(4;14), t(14;16) and add1q were negative.

The diagnosis formulated was of IgG k multiple myeloma stage I (R-ISS) and transverse colon adenocarcinoma stage I.

Given the recent patient's history of colonic cancer, colostomy bag use, and many infections, treatment was initiated in accordance with the CyBorD protocol (first line). Treatment with Lenalidomide was avoided in order not to increase the risk of infections and the reactivation of the colonic neoplasm. After three cycles, the patient entered PD, and the regimen was switched to VRD (second line) and after three more cycles SD was reached. Thus, the treatment plan was adjusted to include DRd (third line). After three cycles of DRd, PD was confirmed, and the fourth-line of treatment (KD) was initiated. Despite achieving VGPR, the disease progressed after 17 cycles and a new line of treatment was needed.

The patient attained VGPR with the PVd protocol (fifth line). A total of 13 cycles were completed before the disease progressed.

At the same time as receiving multiple myeloma treatments, the patient was seeing his gastro oncologist and surgeon regularly for the colonic cancer. In 2020, a manual termino-terminal anastomosis was used to seal the colostomy bag. He did not require any additional oncologic or surgical care.

Before starting the 14th cycle of PVd treatment, the patient was brought to our hospital's gastroenterology department in 2022 due to pleurisy and acute pancreatitis. GGT 997 U/L (0-73 U/L), FAS 827 U/L (46-116 U/L), and an LDH level of 1076 U/L (105-248 U/L) were found during the laboratory tests. His exam showed no palpable abdominal masses.

The suspicion of acute pancreatitis, peritoneal carcinomatosis and potential secondary hepatic determination (given the history of colonic malignancy) determined the request of thoracic, abdominal and pelvis CT scan. A left massive pleuritis was discovered and an therapeutic thoracentesis was performed with the evacuation of an exudate with no pathological cells revealed.

The conservatory therapy for acute pancreatitis was not successful and the examination showed the apparition of a tumor in the half upper abdomen. The CT examination showed a retroperitoneal tumor with invasion of the posterior wall of the stomach.

A stomach biopsy was performed and the results of the immunohistochemical testing revealed a plasmacytoma diagnosis (CD 138, MUM1 and kappa positive).

We decided to start the patient's treatment with anti BCMA bispecific antibodies. After the first cycle the abdominal tumor was reduced with a third of its initial dimensions. Unfortunately, the patient died from sepsis, pleuritis, and bronchopneumonia due to a coronavirus infection.

Conclusions

Solid tumors and multiple myeloma coexist with a high incidence.7,8,9 Within the patients diagnosed at Fundeni Clinical Institute's Hematology Center, we estimate a 10% occurrence. The main challenge consists of the correct diagnosis of the bone lesions (bone metastasis or osteolytic lesions) and the constant adaptation of the treatment plan.3,6 The association of a solid neoplasm and multiple myeloma raises the risk of thrombosis and lenalidomide therapy can lead to the reactivation of the solid cancer. The merger is also problematic, particularly when it comes to complications—infections being one of the most dreaded results.4,5 The requirement to follow the patient in a multidisciplinary setting with a team of medical specialists made up of hematologists, radiologists, surgeons, and oncologists is perhaps the most crucial consideration.

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Patient consent for publication

The authors declare that all the procedures and experiments of this study respect the ethical standards in the Helsinki Declaration of 1975, as revised in 2008(5), as well as the national law. Informed consent was obtained from all the patients included in the study.

Conflicts of interest

There are no conflicts of interest regarding this article.

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