

UNRELATED CANCER OR CHEMOTHERAPY-INDUCED MALIGNANCY: A CASE OF RECTAL ADENOCARCINOMA FOLLOWED BY PLASMACYTOMA

Fransiscus Arifin¹, Franklin V. Malonda¹

ABSTRACT

Proper diagnosis is the mainstay of comprehensive cancer management. However, this process is not straightforward. Some types of cancers, such as intra-abdominal cancer, are anatomically challenging to sample. Even after proper resection, the pathological diagnosis may be uncertain and requires further immunohistochemical processing. We present a rare case in which a patient with adenocarcinoma of the colon was diagnosed, surgically resected, and received chemotherapy, in which the postoperative specimen was also diagnosed as adenocarcinoma. However, after five years, he was diagnosed with plasmacytoma of the right iliac wing. Here, we discuss the possibility of unrelated secondary cancer or chemotherapy-induced malignancy.

Keywords : colonic adenocarcinoma, double primary, plasmacytoma

¹ Lecturer, Widya Mandala Catholic University Faculty of Medicine

ABSTRAK

Diagnosis kanker yang tepat adalah kunci penatalaksanaan kanker yang komprehensif. Namun, prosesnya tidak selalu mudah. Beberapa jenis kanker secara anatomi sulit untuk diambil sampelnya, seperti kanker intraabdomen. Bahkan setelah reseksi, diagnosis patologis mungkin tidak pasti sehingga memerlukan pemrosesan imunohistokimia lebih lanjut. Kami menyajikan kasus yang jarang terjadi di mana pasien dengan adenokarsinoma usus besar didiagnosis dan direseksi melalui pembedahan serta diberikan kemoterapi, di mana spesimen pasca operasi didiagnosis sebagai adenokarsinoma. Namun, setelah 5 tahun ia didiagnosis menderita plasmacytoma di panggul kanan. Kami membahas kemungkinan kanker kedua yang tidak berhubungan atau keganasan yang dipicu kemoterapi pada kasus ini

INTRODUCTION

An accurate pathological diagnosis is the mainstay of cancer treatment. The first step in any malignancy management involves an effort to determine the pathology of the cancer. To diagnose malignancy, a “triple diagnostic,” including clinical, pathological, and radiological evaluations, is commonly employed (1, 2). Each evaluation method has strengths and weaknesses, which are well-known to cancer physicians (3). In intra-abdominal cancers, where many organs are closely packed together, cancer of one organ might infiltrate other nearby organs, in which the primary organ with malignancy may not be clear even after tumor resection.

There are advanced pathological methods to further assist in the determination of cancer source tissues/organs, mainly using immunohistochemical staining. By analyzing specific markers through IHC, such as CDX2, CK20, β -catenin, PSA, P501S, and P504S, pathologists can differentiate between prostate carcinoma and colon carcinomas in poorly differentiated cancers involving the colorectal-prostate region (4). IHC has emerged as a critical investigative tool for differentiating between primary cancers in synchronized tumors and metastases in cases of synchronous colonic and ovarian tumors (5).

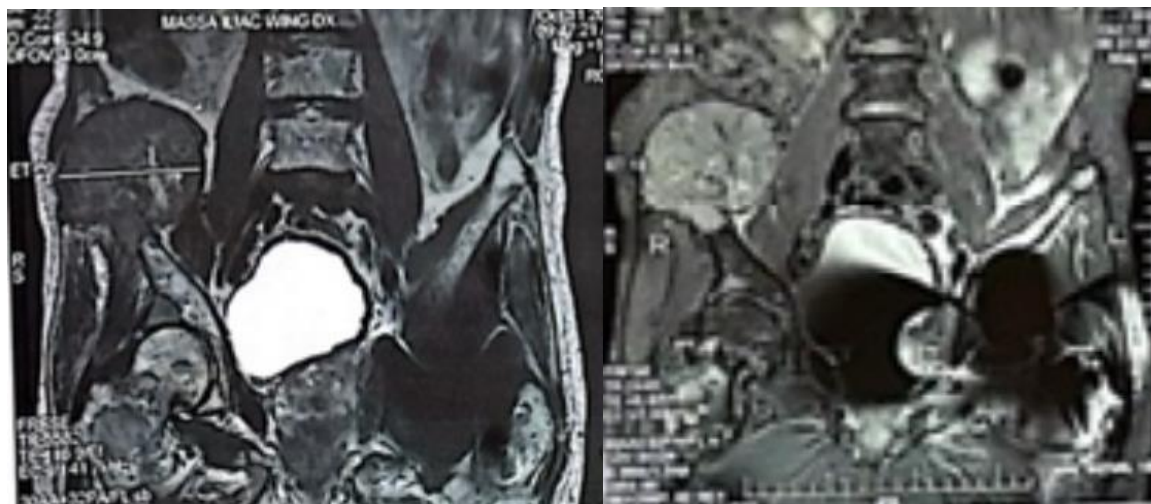
However, because of cost and limited availability, not all cancer specimens are checked by immunohistochemistry. In unequivocal cases, simple staining of histopathological specimens is commonly used. In many cases, this is sufficient to guide the comprehensive management of cancer patients. We report a rare case in which two different histopathological cancers arose in the same anatomic area in a space of 5 years.

CASE REPORT

A 74 years old male visited the gastrointestinal surgery clinic in our hospital with a chief complaint of pain in the right pelvis. The pain was felt around 2 months and persisted despite the consumption of analgesics. There was a history of femoral neck fracture and surgery 5 months previously. The patient had a history of rectal cancer surgery five years prior (low anterior resection, moderately differentiated adenocarcinoma), followed by chemotherapy. Plain radiography of the pelvis revealed a radiopaque mass on the right pelvic wing. Subsequently, follow-up PET did not reveal any metastatic lesions. Computed tomography (CT) and magnetic resonance imaging (MRI) showed a mass 8 x 7,7 x 6,7 cm on the right iliac wing. A core biopsy was performed on the pelvic mass, which was negative for CD 20 and

positive for CD138 on immunohistochemistry. The pathology

results were consistent with those of plasmacytoma.



CT scan with contrast (left) and MRI with contrast (Right) of the case

DISCUSSION

Colorectal adenocarcinoma is the most common type of carcinoma of the gastrointestinal tract and the most common contributor to mortality and morbidity worldwide. The incidence of colorectal cancer usually appears at the age of 60-70 years, and less than 20% of cases appear at the age of less than 50 years.

Colorectal carcinoma is reported to occur more frequently in men than in women and has a high prevalence in Australia, the United States, New Zealand, and several countries with poor lifestyles and dietary habits.

Dietary factors are closely related to the increasing incidence of colorectal cancer, generally due to low intake, low consumption of vegetables, and

consumption of foods high in carbohydrates and fat.

Other studies have suggested that NSAIDs can cause polyp regression after colectomy (6). Another possible risk factor for colon adenocarcinoma is a family history of adenomas (familial adenomatous polyposis), genetic mutations, and a history of colectomy.

Plasma cell neoplasms are characterized by the proliferation of mature B cells, which are irregular and produce immunoglobulins through clonal expansion. Neoplasms can appear as a single lesion (solitary plasmacytoma) or multiple lesions (multiple myeloma). Plasmacytoma is divided into two types: solitary and extramedullary.

Solitary plasmacytoma is defined as a collection of monoclonal neoplastic

plasma cells localized to one organ, without any evidence of systemic plasma cell proliferation disorders. Solitary plasmacytoma appears on the ribs, femur, and pelvis. Solitary plasmacytoma in bones generally presents as a compression fracture with infiltration of bone lesions, followed by damage to the surrounding soft tissue (7).

Clinical manifestations of intra-abdominal extramedullary plasmacytoma usually have slow progression and manifest as a mass effect on the surrounding viscera(8). It can manifest as abdominal pain, diarrhea, changes in bowel habits, rectal bleeding, intestinal obstruction, and hydronephrosis. Because the clinical picture is atypical, extramedullary plasmacytomas are often misdiagnosed as colon adenocarcinoma (7).

To distinguish between secondary, metachronous, and chemotherapy-induced cancers, it is crucial to consider the temporal relationship between the development of multiple primary malignancies and the effect of chemotherapy on cancer occurrence. Metachronous cancer refers to the emergence of a new primary cancer that is not a recurrence or metastasis of an initial lesion, and occurs after a certain time interval following the diagnosis of the first cancer (9). Chemotherapy-induced cancer refers to the development of cancer as a

consequence of exposure to chemotherapeutic agents used to treat a primary malignancy.

In a study examining the influence of chemotherapy on liver metastases in rectal cancer patients, chemotherapy-induced liver damage was linked to a higher incidence of metachronous liver metastasis and poorer survival outcomes (10). This indicates that chemotherapy can affect the development of secondary malignancies, including metachronous cancers, underscoring the significance of distinguishing between treatment-induced and naturally occurring cancers.

Additionally, a case report described a patient who underwent multiple chemotherapy cycles for colorectal cancer, which resulted in the development of metachronous colorectal cancer (11). Rigorous follow-up and diagnosis of metachronous colorectal cancer emphasize the necessity for close monitoring and surveillance in patients undergoing chemotherapy to differentiate between treatment-related and independent cancer occurrences.

Differentiation between secondary, metachronous, and chemotherapy-induced cancers is pivotal in clinical practice to inform appropriate management strategies and treatment decisions. Metachronous cancers may arise due to various factors, including lifestyle-related, environmental,

and genetic influences, as well as the late effects of treatment (9). Conversely, chemotherapy-induced cancers stem from the direct impact of chemotherapeutic agents on cellular DNA, and may manifest as secondary malignancies following treatment for primary cancer.

Colorectal cancer chemotherapy is primarily based on the use of 5FU and oxaliplatin. Recently, immunotherapy (eg.PDL-1 inhibitors) has become more common, and some studies have shown that the concurrent use of chemotherapy and immunotherapy is better because of the immune-enhancing effect of oxaliplatin(12). Currently, there is no evidence that both 5FU and oxaliplatin induce plasmacytoma, although possible pathways exist, and the rise in total neoadjuvant therapy as a treatment strategy, which employs extensive chemo-,radio-, or chemoradiotherapy, has not increased the incidence of plasmacytoma (13).

CONCLUSION

In conclusion, the differentiation between metachronous cancer and chemotherapy-induced cancer depends on recognizing the temporal sequence of cancer development, the influence of treatment interventions, and the underlying factors contributing to secondary malignancies. In our case, there is a very low possibility of chemotherapy induced plasmacytoma, rather it is a high

possibility that the plasmacytoma is a second unrelated cancer that arises

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