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Case report

Synchronous and metachronous of multiple primary malignancies in the same patient: A rare case report

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Abstract

The synchronous and metachronous occurrence of multiple primary cancers in a single patient is an exceptionally uncommon phenomenon. However, owing to the continual advancements in diagnostic techniques, these instances are systematically classified based on the timing of their manifestation. Synchronous cases manifest within six months of the diagnosis of the preceding neoplasm, while metachronous cases emerge with an interval of more than six months between occurrences. We report the case of a 52-year-old woman who was being treated for infiltrating ductal carcinoma. The patient underwent a right mastectomy and lymph node dissection. Two months later, the patient complained of heavy menstrual bleeding, which revealed endometrial adenocarcinoma. However, a total hysterectomy with bilateral salpingo-oophorectomy was performed, along with chemotherapy. Seven months later, the patient presented with a right axillary mass. Histopathological analysis revealed to be small lymphocytic lymphoma, positive for CD5 and CD23, negative for CD3 and cyclin D1, with no evidence of breast cancer. She received chemotherapy and was treated with rituximab for 2 years. After 18 months, she developed chronic lymphocytic leukemia. She received chemotherapy with bendamustine and rituximab for 6 cycles. Currently, the last PET scan, after completing her treatment, showed no metabolic activity. The management of this condition represents an interesting clinical scenario. The choice of which tumor to treat initially and how to schedule additional treatments based on each patient's tumor risk are also essential considerations. This process must involve multidisciplinary physician team to ensure favorable outcomes.

Keywords: Multiple primary cancer; Breast cancer; Endometrial cancer; Small lymphocytic lymphoma; Chronic lymphocytic leukemia

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1. Introduction

The emergence of multiple primary cancers within a single patient, though rare, has become a subject of increasing significance in contemporary oncology. This study aimed to provide insights into the challenges and complexities involved in the management of such cases. It is paramount to recognize the risk associated with the development of new primary lesions during the follow-up period. Consequently, a multidisciplinary approach becomes indispensable for the optimal management of patients grappling with this intricate medical phenomenon [1].

The challenges inherent in these cases extend beyond the clinical realm, delving into the realms of distinguishing between metastatic occurrences, recurrence of a prior malignancy, and the emergence of entirely new malignant lesions. Factors such as the type of cancer, its progression as well as the overall condition of the patient require judicious evaluation to make informed decisions regarding treatment modalities [2]. The escalating frequency of diagnoses indicating multiple primary malignancies (MPMs) over the past decade sheds light on the intricate interplay of various factors contributing to this phenomenon.

To elucidate the involved complexities, this study presents two illustrative cases, each characterized by the simultaneous presence of three primary malignant tumors. These cases not only exemplify the rarity of such occurrences but also emphasize the challenges posed in managing patients with this unique clinical profile [3,4].

The diagnosis of MPMs can be challenging, and there is no standard treatment for such difficult primary malignancies. However, the management of these conditions should be individualized using tumor board discussion and ensuring multidisciplinary coordinated care, besides considering treatment of the more aggressive malignancy before that with the less malignant potential.

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2. Case report

We report the case of a 52-year-old woman undergoing treatment for infiltrating ductal carcinoma. The patient underwent a right mastectomy and lymph node dissection. Two months later, the patient complained of heavy menstrual bleeding, revealing endometrial adenocarcinoma. However, a total hysterectomy with bilateral salpingo-oophorectomy was performed, along with chemotherapy. Seven months later, the patient presented with a right axillary mass. The histopathological analysis revealed to be a small lymphocytic lymphoma, positive for CD5 and CD23, negative for CD3 and cyclin D1, with no evidence of breast cancer (Fig.1). She received chemotherapy and was treated with rituximab for two years. After 18 months, she developed chronic lymphocytic leukemia. She received chemotherapy with bendamustine and rituximab. The last positron emission tomography (PET) scan showed no metabolic activity. Currently, the patient is stable.

For breast cancer management: two months post-mastectomy, the patient reported heavy menstrual bleeding, prompting further investigation. Subsequent diagnosis revealed endometrial adenocarcinoma. To address this, a total hysterectomy with bilateral salpingo-oophorectomy was performed, followed by chemotherapy tailored to the specific characteristics of the endometrial cancer.

For endometrial cancer and small lymphocytic lymphoma: seven months later, the patient presented with a palpable right axillary mass. Histopathological analysis confirmed small lymphocytic lymphoma, characterized by positivity for CD5, and CD23 and negativity for CD3 and cyclin D1. Notably, there was no evidence of recurrent breast cancer at this stage.

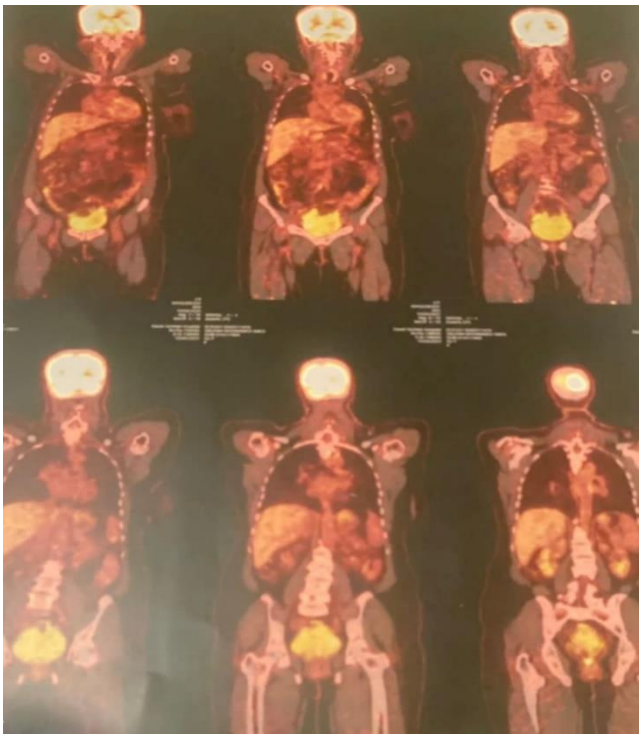

Fig.1. A visual represents the findings of a PET scan, providing a detailed insight into the patient's condition. The scan clearly demonstrates the complete absence of metabolic activity in a patient who has been diagnosed with chronic lymphocytic leukemia.

Treatment Approach: the multidisciplinary team employed a comprehensive treatment approach, involving chemotherapy specific to the lymphoma and subsequent treatment with rituximab for a duration of two years. Regular monitoring and imaging assessments were crucial in tracking the patient's response to treatment.

For chronic lymphocytic leukemia (CLL): after 18 months, an additional layer was added to the complex medical narrative when the patient developed CLL. This required a tailored chemotherapy regimen, combining bendamustine and rituximab. Notably, the latest PET scan indicated no metabolic activity, signifying a positive response to the treatment.

3. Discussion

The delineation of Multiple Primary Malignancies (MPMs) hinges on meeting three cardinal criteria: each tumor must exhibit distinct characteristics, manifest definitive features of malignancy, and the possibility of one being a metastasis of another must be unequivocally ruled out [5,6]. One of the central challenges in the management of such cases lies in the intricate task of differential diagnosis. Distinguishing between local metastasis, distant metastasis, recurrence of a prior malignancy, and the identification of entirely new malignant lesions, each characterized by distinct histopathologies, is a task fraught with complexities. While standardized guidelines for managing primary malignancies are noticeably lacking, critical considerations such as cancer type, disease progression, response to therapy, and the overall condition of the patient play pivotal roles in informing treatment decisions. The overarching principle is clear: if the primary lesion holds the potential for cure, radical therapy is advised; otherwise, a palliative treatment approach is judicious [4].

The estimated incidence of Multiple Primary Malignant Neoplasms (MPMNs) spans a spectrum from 0.73% to 11.7% [7]. The likelihood of developing multiple primary malignant tumors (MPMT) appears to be high in individuals with no familial history of malignancy due to a shared influence of genetic and environmental factors. Continuous research remains vital to uncover the precise details of these mechanisms and explore possibilities for prevention and treatment. Genetic factors may also contribute, as evidenced by an increased risk observed in families with BRCA gene mutations [8,9]. Additionally, Oncologists face the challenge of balancing the therapeutic benefits of these treatments with the potential risks of inducing secondary cancers. Advances in treatment strategies, such as targeted therapies and immunotherapies, aim to minimize collateral damage to healthy cells and reduce the risk of secondary malignancies. Understanding and managing these complexities are crucial for optimizing cancer treatment outcomes. It underscores the importance of ongoing research to refine treatment approaches and mitigate the long-term risks associated with cancer therapies. It is essential for patients and healthcare providers to engage in informed discussions about the potential risks and benefits of various treatment options.

In conclusion, continued surveillance for the emergence of subsequent cancers becomes essential in these situations. A thorough pre-operative assessment and interdisciplinary

collaboration emerge as crucial components to ensure optimal treatment outcomes. In the evolving landscape of medical knowledge, case reports play a pivotal role. They significantly contribute to advancing medical understanding by generating new hypotheses, thereby prompting the scientific community to validate them. This study, presenting a notably rare clinical scenario, provides initial evidence of the efficacy of a therapeutic protocol, warranting further in-depth investigation. As we persist in unraveling the complexities of multiple primary malignancies, the insights gleaned from such cases pave the way for an improved understanding and enhanced patient care within the realm of oncology.

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Declaration of Competing Interest

The authors declare that they do not have a conflict of interest.

Author contributions

The collection of family data, clinical and para-clinical examination, and the drafting of the initial manuscript were carried out by ASA and MF. The analysis and interpretation of data were performed by ASA and MF. All authors contributed to the article and approved the submitted version.

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