Multiple primary malignancies involving papillary thyroid carcinoma and non-Hodgkin’s lymphoma (NHL) is an extremely unusual event. Here, we report the case of a 70-year-old man presented with high-grade fevers and abdominal discomfort and were found to have pancytopenia. He had generalized lymphadenopathy, hepatosplenomegalgy, goiter, and tracheal shift. Biopsy of the left cervical lymph node was positive for papillary carcinoma of the thyroid. He underwent excision biopsy of axillary lymph node which was suggestive of high-grade NHL. The patient was started on chemotherapy (R-CHOP) and his fevers resolved promptly. He then underwent total thyroidectomy and the histopathology of the thyroid gland post-operative showed papillary carcinoma. The second primary malignancy is a second malignant neoplasm occurring in a patient with known cancer. This case highlights the unusual synchronous occurrence of the papillary carcinoma of thyroid and NHL and the diagnostic challenges involved in such cases.

Key words: Double primary malignancy, Metachronous, Second malignancy, Synchronous
Panduranga et al. Dual primary malignancy: Thyroid carcinoma and lymphoma

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Figure 1: Chest X-ray showing tracheal shift to the right with indentation on the left side and mediastinal widening

Figure 2: Contrast-enhanced computed tomography chest and abdomen showing extensive bilateral axillary, mediastinal, paracaval lymphadenopathy, and massive splenomegaly

Figure 3: Histopathology of cervical lymph node showing papillary thyroid carcinoma

Figure 4: Immunohistochemistry of axillary lymph node with CD 20 as marker

The patient was started on chemotherapy with R-CHOP (rituximab, doxorubicin, vincristine, and cyclophosphamide) and his fevers resolved promptly. His lymphadenopathy and hepatosplenomegaly also showed marked regression. He underwent total thyroidectomy and the histopathology of the thyroid gland postoperative showed papillary carcinoma (largest focus 2 cm × 1 cm) in the background of multinodular goiter with an extrathyroidal extension and metastasis to the right lymph nodes, central lymph nodes, and superior mediastinal nodes. Concomitant follicular adenoma was also seen in the background of multinodular goiter. Subsequently, radioactive iodine ablation was planned, but he was lost to follow-up.

**DISCUSSION**

The second primary malignancy (SPM) is a second *de novo* malignant neoplasm occurring in a patient with known cancer. The criteria for classifying a tumor as SPM have remained consistent since it was first proposed in 1932. Warren and Gates criteria for diagnosis of multiple primary malignancies include the following: (a) Each of the tumors must be malignancy confirmed by histology, (b) each must be geographically separate and distinct; the lesions should be separated by normal mucosa, and (c) probability of one being the metastasis of the other must be excluded [3].

SPM can arise either synchronously or metachronously [2]. This is based on their temporal relationship to the primary or index tumor. The term “metachronous” is used when the second...
primary malignancy is diagnosed >6 months after the diagnosis of the index tumor and “synchronous” designates SPM diagnosed within 6 months of the index tumor.

The pathophysiology behind the occurrence of multiple primary malignancies has been theorized to be common carcinogen-induced multiple cancers in an exposed epithelial surface, called “field cancerization” as seen in head-neck tumors, as a late side effect of treatment used to treat the first tumor and a genetic predisposition to neoplasia [4]. Other possible causal factors include persistent carcinogen exposure from environment, progressive ozone depletion and effects of ionizing radiation, increased use of organ transplant, and the increasing use of newer treatment modalities such as hormonal manipulation, target therapies, genetic manipulation, and immunomodulators [5].

The patient described in our case had all the clinical findings suggestive of lymphoma, but we were surprised to find papillary carcinoma of thyroid on cervical lymph node biopsy. Bone marrow examination was also not helpful. However, we persisted with our clinical suspicion and got a second lymph node biopsy (this time from axilla) which diagnosed NHL in the patient, the cause of his persistent high-grade fevers, generalized lymphadenopathy, and hepatosplenomegaly. NHLs most frequently arise from lymph nodes, but an extranodal site can be the primary source in approximately 30% of cases, and the thyroid gland is among the most common of these extranodal sites. However, in our case, there was no evidence of primary thyroid lymphoma, lymphoid infiltration, or metastasis within the gland. Therefore, we can assume that papillary carcinoma of thyroid and lymphoma in our patient was two different primary malignancies occurring synchronously. This assumption is also in agreement with NAACCR definition that “multiple lesions of different histologic types occurring in different sites are considered as separate primaries whether occurring simultaneously or at different times” [2].

A study analyzing the SEER Program database has revealed that the incidence of multiple primaries varies from 1% (initial liver primary) to as high as 16% (initial bladder primary); if the initial primary is the breast, the percentage of patients expected to develop multiple primaries is 10% and for the lung it is 4% [6]. In a recent Indian study, most diagnosed synchronous malignancies were carcinoma breast, while in metachronous malignancies, carcinoma breast and gynecological cancers were most common [7]. Preetam et al. reported a double primary cancer of infiltrating ductal carcinoma of the breast and small-cell carcinoma of the lung [8].

An online search for synchronous malignancy involving papillary thyroid carcinoma and lymphoma failed to yield any results. Therefore, the case that we have presented may be the first case documenting this to the best of our knowledge.

A high index of suspicion of the second malignancy should prompt a thorough and aggressive workup for early detection and treatment for improved outcomes. Importance of clinical assessment to direct further workup cannot be overemphasized.

**CONCLUSION**

This case highlights the unusual synchronous occurrence of the papillary carcinoma of thyroid and NHL and the diagnostic challenges involved in such cases.

**REFERENCES**

1. Chowdary T, Sivaraj SM, Rao GV, Thirunavukkasrasu S. Dual malignancies: Do they have a worse prognosis than their individual counterparts. Arch Int Surg 2015;5:29-32.
2. Howe HL, editor. A review of the definition for multiple primary cancers in the United States. In: Workshop Proceedings from December 4-6. 2002 in Princeton, New Jersey. Springfield, Ill, USA: North American Association of Central Cancer Registries; 2003.
3. Warren S, Gates O. Multiple primary malignant tumors. A survey of the literature and a statistical study. Am J Cancer 1932;16:1358-62.
4. Hsieh WC, Chen YM, Perng RP. Temporal relationship between cancers of the lung and upper aerodigestive tract. Jpn J Clin Oncol 1997;27:63-6.
5. Mehdi I, Shah AH, Moona MS, Verma K, Abussa A, Elramih R, et al. Synchronous and metachronous malignant tumours expect the unexpected. J Pak Med Assoc 2010;60:905-9.
6. Hayat MJ, Howlader N, Reichman ME, Edwards BK. Cancer statistics, trends, and multiple primary cancer analyses from the surveillance, epidemiology, and end results (SEER) program. Oncologist 2007;12:20-37.
7. Sharma D, Singh G, Kakkar N, Raj S. Second primary malignancy: A retrospective analysis report from a tertiary cancer center of North India. Indian J Cancer 2016;53:595-9.
8. Acharya P, Ramakrishna A, Kanchan T, Magazine R. Dual primary malignancy: A rare organ combination. Case Rep Pulmonol 2014;2014:760631.

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