CLINICAL VIGNETTE

Thyroid Cancer in a 40-Year-Old Woman with Colon Cancer

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Case

A 40-year-old female with recently diagnosed Colon cancer at age 39 was referred for an incidental Thyroid nodule found on a surveillance positron emission tomography (PET) Scan. She developed lower abdominal pain during pregnancy and underwent colonoscopy after delivery which found well differentiated adenocarcinoma. She had left hemicolectomy with perineural invasion and 4/14 positive lymph nodes with T3N2aMx. After diagnosis she was referred to UCLA health for adjuvant therapy. During staging an incidental thyroid nodule was noted on PET/CT and she was referred to Internal Medicine.

She had no symptoms of hypothyroidism or hyperthyroidism. She has no family history of Thyroid cancer and no personal history of radiation exposure. Exam revealed an enlarged nodular thyroid without neck lymphadenopathy.

Her TSH level was normal. Thyroid ultrasound showed multiple thyroid nodules which were aspirated. The two left thyroid nodules were both benign and the right thyroid nodule (1.4 cm size) was positive for Papillary Thyroid Cancer. She subsequently underwent total thyroidectomy.

We reviewed the incidental diagnosis of a second primary cancer detected on surveillance imaging for colon cancer.

Discussion

Technical innovations in imaging have tremendously increased the recognition and detection of multiple primary cancers at the time of diagnosis of colon cancer. Cancer develops because of accumulated mutations of multiple carcinogenic genes, which increase the predisposition of developing subsequent cancers in other organs.[1] In addition to the increased detection of secondary primary cancers from staging and surveillance imaging,[2] there is also an increased risk for developing secondary primary cancers from treatment for the initial cancer.

In a patient with a newly diagnosed colon cancer, the simultaneous occurrence of a secondary primary cancer is often overlooked due to exclusively prioritizing the evaluation of known primary cancer decreasing the importance of diagnosing another primary neoplasm.[3] Attention to diagnose or exclude concurrent multiple primary cancers should not be neglected by the medical team.

Colon cancer affects men and women of all racial and ethnic groups and is most often found in people who are 50 years old or older. Colon cancer is the third leading cause of cancer-related deaths in the United States and is the third most common cancer in men and in women.[4]

Approximately 20 percent of patients with colon cancer in the United States have distant metastatic disease at the time of presentation.[5] The most common metastatic sites are the regional lymph nodes, liver, lungs, and peritoneum. Thyroid gland is considered a rare site for colon cancer metastases, accounting only for less than 5% based on autopsy findings.[6]

The incidence of colon cancer with concurrent second primary cancer of the thyroid is not known. Thyroid cancer is one of the known extra colonic cancers associated with familial adenomatous polyposis (FAP) coli.[7] Primary thyroid cancer occurs in 1-2 percent of all FAP patients and is predominantly found in young women under 30 years.[8] About 95% of primary thyroid cancers associated with FAP are histologically papillary with a peculiar cribriform pattern.[9]

Other studies have reported excess of co-existing thyroid cancer in colon cancer in women in New South Wales, RR=2.7 and in men in Connecticut, RR =2.9.[2,10] Another study reported risk of a second primary cancer after a first primary thyroid cancer was 1.31.[11]

For patients with colon cancer with a co-existing primary thyroid nodule, it is critical and prudent to further characterize the nature of thyroid nodules as benign, metastatic or as a new primary malignancy. Fine needle aspiration cytology with immunohistochemical staining can help elucidate the prognosis and improve the clinical management of the thyroid lesions.[12]

Conclusion

It is clinically warranted to conduct an extensive and thorough medical history directed at clinical risks of a second primary cancer after initial diagnosis of colon cancer. Factors that heightens the risk for developing secondary primary cancers include potential iatrogenic causes such as prior radiotherapy or chemotherapy. Other important risk factors include smoking, alcohol use, carcinogenic exposure as well as personal or family history of cancer.

Focused cancer surveillance in a cancer patient should include age and gender for appropriate cancer screening.

REFERENCES

1. **Zubaidi A**. Multiple primary cancers of the colon, rectum, and the thyroid gland. *Saudi J Gastroenterol*. 2008 Oct;14(4):202-5. doi: 10.4103/1319-3767.43277. PMID: 19568539; PMCID: PMC2702935.
2. **McCredie M, Macfarlane GJ, Bell J, Coates M**. Second primary cancers after cancers of the colon and rectum in New South Wales, Australia, 1972-1991. *Cancer Epidemiol Biomarkers Prev*. 1997 Mar;6(3):155-60. PMID: 9138657.
3. **Ueno M, Muto T, Oya M, Ota H, Azekura K, Yamaguchi T**. Multiple primary cancer: an experience at the Cancer Institute Hospital with special reference to colorectal cancer. *Int J Clin Oncol*. 2003 Jun;8(3):162-7. doi: 10.1007/s10147-003-0322-z. PMID: 12851840.
4. CDC Colon Cancer Website. Available from: https://www.cdc.gov/cancer/colorectal/index.htm.
5. **Siegel RL, Miller KD, Jemal A**. Cancer statistics, 2016. *CA Cancer J Clin*. 2016 Jan-Feb;66(1):7-30. doi: 10.3322/caac.21332. Epub 2016 Jan 7. PMID: 26742998.
6. **Shimaoka K, Sokal JE, Pickren JW**. Metastatic neoplasms in the thyroid gland. Pathological and clinical findings. *Cancer*. 1962 May-Jun;15:557-65. doi: 10.1002/1097-0142(196205/06)15:3<557::aid-cncr2820150315>3.0.co;2-h. PMID: 13911946.
7. **Jagelman, D**. Familial polyposis coli: The clinical spectrum. In: Steele G, Burt RW, Winawer SJ, Karr JP, eds. *Basic and Clinical Perspectives of Colorectal Polyps and Cancer*. New York: Alan R. Liss, Inc.; 1988. p. 169–176.
8. **Cetta F, Olschwang S, Petracci M, Montalto G, Baldi C, Zuckermann M, Mariani Costantini R, Fusco A**. Genetic alterations in thyroid carcinoma associated with familial adenomatous polyposis: clinical implications and suggestions for early detection. *World J Surg*. 1998 Dec;22(12):1231-6. doi: 10.1007/s002689900550. PMID: 9841749.
9. **Harach HR, Williams GT, Williams ED**. Familial adenomatous polyposis associated thyroid carcinoma: a distinct type of follicular cell neoplasm. *Histopathology*. 1994 Dec;25(6):549-61. doi: 10.1111/j.1365-2559.1994.tb01374.x. PMID: 7698732.
10. **Hoar SK, Wilson J, Blot WJ, McLaughlin JK, Winn DM, Kantor AF**. Second cancer following cancer of the digestive system in Connecticut, 1935-82. *Natl Cancer Inst Monogr*. 1985 Dec;68:49-82. PMID: 4088313.
11. **Bondeson L, Ljungberg O**. Occult thyroid carcinoma at autopsy in Malmö, Sweden. *Cancer*. 1981 Jan 15;47(2):319-23. doi: 10.1002/1097-0142(19810115)47:2<319::aid-cncr2820470218>3.0.co;2-a. PMID: 7459819.
12. **Ramaekers F, van Niekerk C, Poels L, Schaafsma E, Huijsmans A, Robben H, Schaart G, Vooijs P**. Use of monoclonal antibodies to keratin 7 in the differential diagnosis of adenocarcinomas. *Am J Pathol*. 1990 Mar;136(3):641-55. PMID: 1690512; PMCID: PMC1877485.