Case Report

Triple Synchronous Primary Cancers of Thyroid, Bladder and Prostate: A Case Report

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Kuwait Medical Journal 2014; 46 (1): 62 - 64

ABSTRACT

Multiple primary cancer is defined as two or more cancers in a single patient. Although the presence of bladder and prostate carcinoma in the same patient is not a rare event, third primary malignancy in patients with bladder and prostate carcinoma is rare. In this report, we present a patient who developed synchronous multiple primary cancers including bladder, prostate and thyroid papillary cancer within a five-month period. This combination of synchronous multiple primary carcinomas, according to the best our knowledge, has never been reported in the literature.

In conclusion, the possibility that multiple primary malignancies exist must always be considered during pretreatment evaluation. The focal thyroid 2-[18F]fluoro-2-deoxy-D-glucose positron emission tomography / computed tomography incidentaloma with high standardized uptake values warrants a pathological diagnostic procedure.

KEY WORDS: prostate, synchronous multiple primary neoplasms, thyroid gland, urinary bladder

INTRODUCTION

Multiple primary cancer (MPC) is defined as two or more cancers in a single patient. Each tumor is independent rather than a metastasis from another tumor and it does not have any relationship with each other. Moertel et al classified MPC observed at the same time or within six months as synchronous MPC, and cancers developing with more than six months as an interval as metachronous multiple primary cancers[1].

A previous study defined the incidence of MPC, which also included autopsy cases, as 1.8 - 11% of all cancers[2]. The presence of bladder and prostate carcinomas in the same patient is not a rare event. Chun reported that the rate of bladder carcinoma in patients with prostate carcinoma is eighteen times higher[3]. However, a third primary malignancy in patients with bladder and prostate carcinoma is rare. In this report, we present a patient who developed synchronous MPC including bladder, prostate and thyroid papillary cancer within a five-month period. This combination of synchronous MPC, according to our knowledge, has never been reported in the literature.

CASE REPORT

A 62-year-old male presented with hematuria and frequent urination in August 2010 from another hospital. The patient underwent transurethral resection of the bladder tumor (TURB) and histopathology revealed it to be a transitional cell carcinoma with lymph node metastasis, prostate and muscle invasion. The vital signs and physical examination were normal. Routine hematology and blood biochemistry investigations were normal. Serum freeT3 was 3.82 ng/dl (normal range 1.80 - 4.60 ng/dl), freeT4 1.18 ng/dl (normal range 0.93 - 1.70 ng/dl) and thyroid stimulating hormone 2.20 μU/ml (normal range 0.27 - 4.20 μU/ml). Hematuria and pyuria was found in urine analysis. He had no previous history of malignancy, chemotherapy or radiotherapy and there was no family history of malignancy. The patient underwent radical cystectomy and urinary diversion.

The pathology report showed invasive urothelial carcinoma and prostate adenocarcinoma. There was invasion of the muscle tissue, 8 of 14 lymph nodes, vesicular seminalis and prostate. Gleason

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The tumor was staged as grade 4 (T4aN1Mx) and the patient was started on chemotherapy including gemcitabine plus cisplatin combination. Computerized tomography scan of the abdomen prior to cystectomy was unremarkable except for cystic lesions in the liver. Postoperative prostate specific antigen (PSA) value was 0.01 ng/ml (normal range 0.0 - 5.4 ng/ml).

A 2-[18F]fluoro-2-deoxy-D-glucose positron emission tomography/computed tomography (FDG-PET/CT) performed two months later revealed thyroid uptake, with a maximum standardized uptake values (SUVmax) of 46. Thyroid ultrasonography revealed a 1.5 cm solid nodule in the right thyroid lobe. Fine needle aspiration (FNA) of this nodule was done and the biopsy specimen was stained with Papanicalau (PAP) stain. On microscopic evaluation, the specimen was hypercellular and composed of true papillary structures lined by tumor cells having large eosinophilic cytoplasm, intranuclear pseudo inclusions and nuclear grooves. According to these findings our diagnosis was consistent with “papillary thyroid carcinoma” (Fig. 1). Afterwards total thyroidectomy and mediastinal lymph-node dissection was performed. Macroscopic examination of thyroid gland showed yellowish white, solitary, 1.5 x 1 x 1 cm sized nodular lesion in the right lobe. Histopathologic examination of this nodule revealed a well-circumscribed, colloid poor tumoral lesion. The tumor consisted of follicular papillary structures containing large eosinophilic cytoplasm, intranuclear pseudoinclusions and nuclear grooves. The diagnosis again was “papillary thyroid carcinoma” (Fig. 2). He was treated with radioactive iodine (I-131) and started on L-thyroxin.

The patient was given fourth time chemotherapy including gemcitabine plus cisplatin combination for bladder cancer. FDG-PET/CT was normal after chemotherapy for the fourth time.

### DISCUSSION

Among those with multiple primary malignancies, double cancer is commonly seen, while triple or quintuple cancers occur in only less than 0.1% of the population. Improved diagnostic techniques and increased elderly patient populations have also been indicated as possible causes. Although the mechanism for the pathogenesis of MPC has yet to be clarified, some factors such as heredity, constitution, and environment, and immunology and carcinogens (viruses, radiotherapy and chemical treatments) have been implicated.

MPC could develop in the same system (e.g., in the genitourinary system). The presence of bladder and prostate carcinomas in the same patient is not rare event. Chun reported that the rate of bladder carcinoma in patients with prostate carcinoma is 18 times higher and the rate of prostate carcinoma in those with bladder carcinoma is 19 times higher than expected. Although bladder and prostate carcinoma can co-exist in the same individual frequently enough, the rare event is the appearance of a third malignancy.

FDG-PET / CT imaging has been used extensively in the diagnostic work-up and the follow-up of a variety of cancers in medicine and oncology clinics. However, several studies have demonstrated, like the present case, the incidental detection of synchronous malignancies by performing PET. Thyroid FDG-PET / CT incidentaloma has prevalence of 2.2%. The focal thyroid FDG-PET / CT incidentaloma carries a high risk of malignancy, especially in cases with high SUVs as was the case in our patient.

Papillary thyroid cancer is most frequently sporadic but can also be familial or associated to other cancers, mainly colorectal cancer, as well as
to other autosomal dominant pathologies (familial adenomatous polyposis, Gardner syndrome, Cowden syndrome, Werner syndrome, Carney complex, Peutz-Jeghers syndrome etc.). Among patients with papillary thyroid cancers, malignant lesions were found in other sites (such as breast, larynx, basal cell carcinoma, colon and rectum, uterine cervix, endometrium, ovary, renal, lung) in 3.5 - 20%. The most frequent sites were colon and rectum, representing 15% of all associations. Both diagnoses were simultaneously found in 8% of cases while the extra-thyroidal malignant tumour was found after the papillary thyroid cancer in 12%.[9,8]

A case of synchronous multiple primary malignancy including rectum, uterine cervix and thyroid was reported by Lee JS et al.[10]. Another case of MPC including squamous cell carcinoma of the lung, transitional cell carcinoma of the renal pelvis and bladder, prostatic carcinoma and thyroid carcinoma was reported by Kobayashi K et al.[10]. To the best of our knowledge, although there are a few report about this combination of MPC,[10] synchronous bladder, prostate and thyroid papillary cancer has never been reported in the literature. In this report, we present a patient who developed synchronous MPC including bladder, prostate and thyroid papillary cancer.

CONCLUSION

In conclusion, the possibility that multiple primary malignancies co-exist must always be considered during pretreatment evaluation. The focal thyroid FDG-PET / CT incidentaloma with high SUVs warrants a pathological diagnostic procedure.

REFERENCES