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Case Report

Triple Primary Carcinomas: Prostatic Adenocarcinoma, Bladder Urethral Carcinoma and Papillary Thyroid Carcinoma: A Case Report

Amrallah A. Mohammad[1, 2], Abdullah S. Al-Zahrani[1], Mohammed Mansour[3], Hafez Mostafa Ghanem[1], Amr M. El Saify[1] and Hani M.EL-Khatib[1]

[1] Oncology Center, King Abdullah Medical City - Holy Capital, Saudi Arabia

[2] Department of Medical Oncology, Faculty of Medicine, Zagazig University, Egypt

[3] Pathology department, King Abdullah Medical City - Holy Capital, Saudi Arabia

Abstract

Introduction: Patients with multiple tumors represent a segment of the cancer survivor population affected more than once by cancer, the phenomenon is still rare.

Case presentation: In this report we present a patient who developed primary bladder urethral carcinoma with synchronous prostatic adenocarcinoma and metachronous papillary thyroid carcinoma where diagnosed within nine month period. There was no clear risk factors could explain this combination except smoking history.

Conclusion: The diagnosis of cancer should not exclude the existence of other concomitant malignancies. This combination of multiple primary carcinomas, to our knowledge, has never been reported in the literature.

Keywords: Synchronous/metachronous; primary malignancy; multiple primary malignancies

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Consent: We confirm that the patient has given the informed consent for the case report to be published.

***Correspondence to:** Amrallah A. Mohammad, Oncology Center, King Abdullah Medical City - Holy Capital, Saudi Arabia; **Email**: amrallaabdelmoneem@yahoo.com

Introduction

Multiple primary cancers (MPCs) generally fall into two categories; synchronous, in which the second cancers occur simultaneously or within 6 months after the first malignancy, and metachronous, if developed after 6 months [1]. It was firstly reported by Billroth [2].

Case presentation

A 67 years old heavy smoker male patient presented with recurrent hematuria, dysuria, hesitancy and generalized bony pain for a period four months which were gradual onset and progressive course. Magnetic Resonance Imaging (MRI) of the pelvis revealed posterior urinary bladder wall polyp and heterogeneous prostatic mass (figure1; a, b). Bone scan showed extensive bone metastasis. At the level of routine laboratory tests, no alterations of the principal biochemical parameters were found; only PSA had a value of 87ng/dl and serum alkaline phosphatase was 1285 u/l.

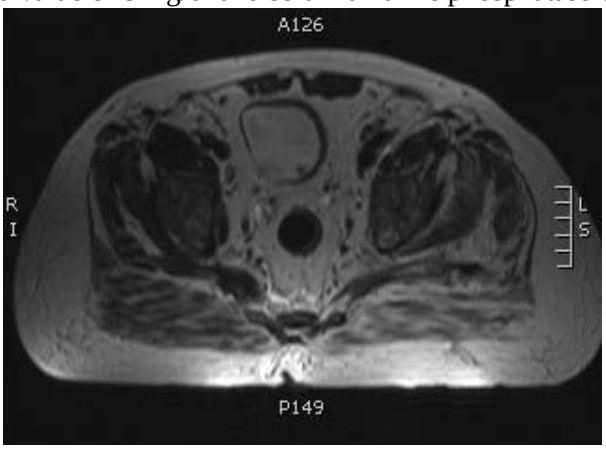

Figure1a Axial MRI T2WI: posterior urinary bladder wall polyp

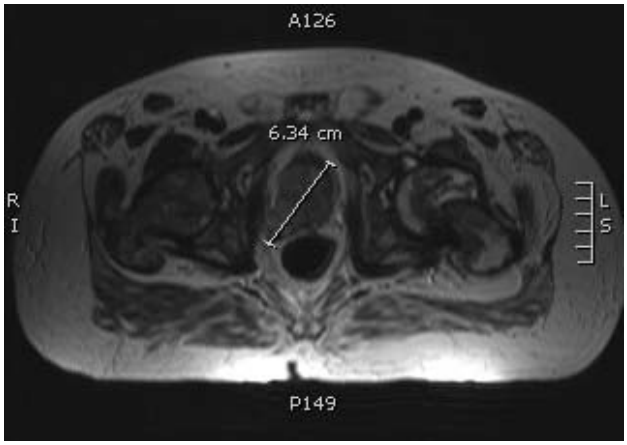

Figure1b axial MRI T2WI: heterogeneous prostatic mass.

Biopsies were taken from both prostatic lobes (imaging guided) and from bladder mass through transurethral resection (TUR). Histopathological examination revealed synchronous papillary urothelial bladder carcinoma, low grade without vascular or lymphatic invasion, and prostatic adenocarcinoma; Gleason score grade 4+4 = score of 8, involving 60% of needle core biopsy with perineural invasion is present (figure 2; a, b).

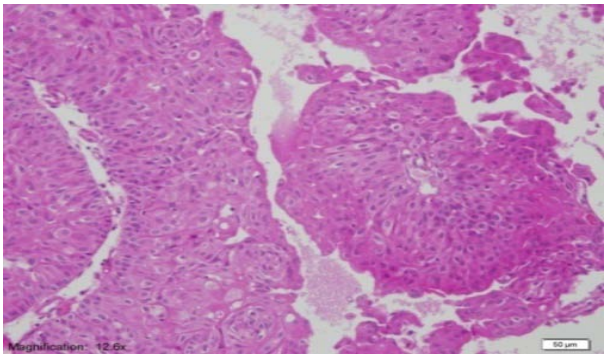

Figure 2a urinary bladder: carcinoma, M 12.6 X, H & E.

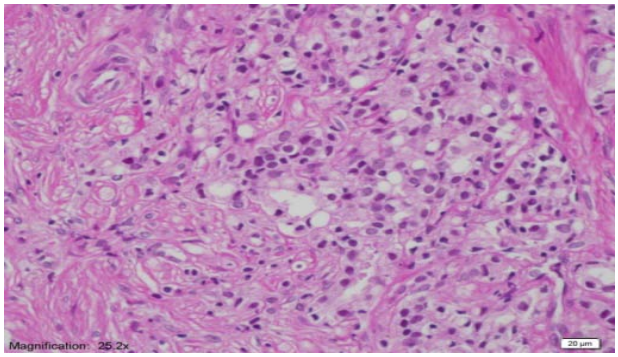

Figure 2b Prostate: Adenocarcinoma, M 2.52 X H&E

We diagnosed the case as stage I non invasive bladder urothelial carcinoma, low grade which treated by TUR and stage IV prostatic adenocarcinoma which started on LHRH agonist and Zoledronic acid. After nine months of follow up with subjective and objective improvement in the form of normalization in alkaline phosphatase and PSA levels), there was painless neck mass of gradual onset and progressive course.

Computed tomography scan of the neck showed multiple bilateral thyroid nodules (right lobe measuring 2.2 x 3.6 x 2cm and the left lobe measuring 1.8 x 4 x 2cm), subcentimetric deep cervical and supraclavicular lymphadenopathy (figure 3).

Fine needle aspiration was taken from both nodules with histopathology evaluation revealed bilateral multifocal thyroid carcinoma with lymphovascular invasion and eleven out of twenty lymph nodes were positive for carcinoma with extra capsular extension (figure 4).The patient was subjected to total thyrodectomy with neck dissection. Post operative period passed smoothly without serious complication.

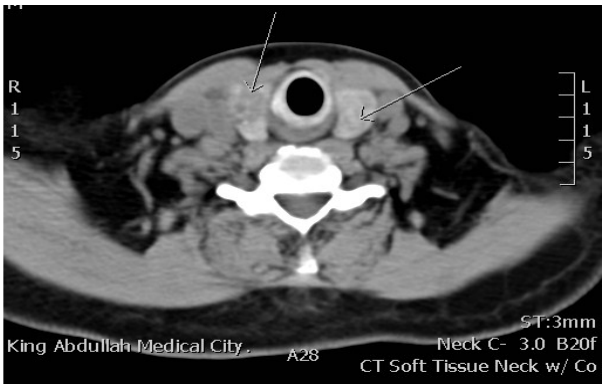

Figure 3 Axial CT neck; bilateral thyroid soft tissue nodules.

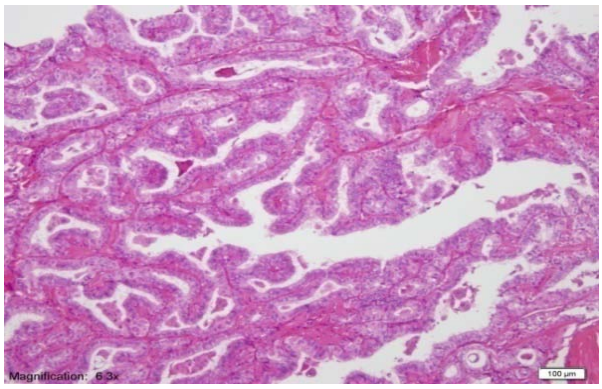

Figure 4 Thyroid papillary carcinoma, M 6.3X, H &E.

Discussion

MPCs are defined as two or more malignancies in a single individual without any relationship between them.

Warren and Gates [3] emphasized that each tumor must afford a picture of malignancy, each must be distinct, and the probability of one being a metastasis of the other must be ruled out. They can be classified into four types;1- multicentric, if the two distinct carcinoma arise in the same organ or tissue; 2- systemic, if they arise on anatomically or functionally allied organs of the same system, 3- paired organs, as in the breasts, and 4- random, if they occur as a co-incidental or accidental association in unrelated sites [4].

Factors that will continue to drive the increase in the number of survivors include the improvements in cancer detection in early stage, advances in treatment and treatments outcome.

In the last three decades, cancer has been transformed from a fatal disease to one in which the majority of people diagnosed with cancer receive highly effective treatments that result in either cure or long-term survivorship which increase the risk of MPCs development. This is explained by several reasons, including genetic predisposition, environmental exposure, exposure to carcinogenic cancer therapies (i.e., iatrogenic risks associated with chemotherapy, radiotherapy and/or hormonal therapy), life-style factors, such as smoking, and, perhaps most importantly, aging.

There is wide range in the frequency rate of MPCs ranged between 0.7% and 14.5%1[5] which can be explained by many factors [6-8]:

a. The majority of published works on them are case reports.

b. Most reports lacked unified definition of MPC.
c. It is not clear whether this range referred to the number of patients with MPCs or MPCs in studied series or it referred to synchronous, metachronous or both.
d. There are very few studies on MPC patients with many limited points as the lower frequency rate, lacked age, gender distribution, time of occurrence and commonest anatomic site.
e. The rate at the upper end is influenced by reports based on risk factors and mathematical formulation.
f. The rate at the lower end reflects their rarity.

Prostate cancer is the most prevalent cancer and the second leading cause of death in western male population. Bladder cancer is the fourth in prevalence of cancer in the same population [9]. Over 90% of prostate cancers are adenocarcinomas [10], among bladder tumors, 90% are urothelial carcinomas [11], as in our case.The presence of bladder and prostate carcinomas in the same patient is not a rare event [12].

In terms of etiopathogenesis, several hypotheses have been issued. One of them refers to the fact that the genitourinary region is under the influence of the same carcinogenic stimuli. Another hypothesis refers to the fact that the first malignant tumor affects the adjacent environment, predisposing to the development of second malignancies [13]. On the other hand, the mean age of prostate cancer is 65 years and prostate cancer incidence increases exponentially with each decade of age. Most bladder cancers occur after 50 years of age. Although many factors have been incriminated in its etiopathogenesis, the only factor present in this case was smoking.

Although bladder and prostate carcinoma can coexist in the same individual frequently enough, the rare event is the appearance of a third malignancy.

There are two cases reported with three primary tumors including bladder and prostate; The first tumor reported by Rovinescu et al [14] was a clear cell carcinoma of the kidney, which was followed by a transitional cell carcinoma of the bladder and then by a distinct adenocarcinoma of the prostate. The second one in 2003, Satoh et al [15] also reported the same combination of multiple primary malignancies in a patient. Our case is the first one of an individual having these two primary malignancies of the urogenital system and another tumor of the thyroid gland.

The possibility that MPCs exist must always be considered during pretreatment evaluation. Screening procedures are especially useful for the early detection of associated tumors, preferably before clinical manifestations occur. There is some evidence that screening will improve outcomes among patients who may develop second malignancies, although the data are limited. The optimal screening modalities and strategies to reduce mortality from second malignancies remain to be defined for most tumor sites. The early diagnosis of secondary malignancies should not be neglected in patients treated for a primary malignancy, especially when the long clinical period before the diagnosis of subsequent tumors is taken into consideration. With careful monitoring, secondary tumors can be detected earlier, and, with appropriate intervention, might be better managed, without compromising survival.

Conclusion

The diagnosis of cancer should not exclude the existence of other concomitant malignancy; especially in patients more than the sixth decade of age. Moreover, the combination of the three different tumors (bladder, prostate and papillary) in one patient, to the best of our knowledge, has never been reported before.

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