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Dual Primary Malignancies - A Case Report

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Abstract

An increasing number of patients with multiple primary cancers, although rare, are encountered due to improved cancer detection, widespread cancer screening and better cancer treatment. Inherited predisposition to cancer, cancer promoting aspects of lifestyle (heavy drinking, smoking, high salt diet, frequent hot food, obesity, etc.) and hormonal and environmental factors have been associated with the occurrence of multiple primary neoplasms. Multiple primary malignant neoplasms are defined as two or more unrelated primary malignant tumors that originate from different organs and occur in the body at the same time or one after another. Increasingly elderly patient populations and improved diagnostic techniques have also been indicated as possible causes. Herein, we present a case of an 80 years old male with synchronous gastric poorly cohesive carcinoma and prostatic adenocarcinoma.

Keywords: Dual primary malignancies

Introduction

Multiple primary malignant neoplasms (MPMN) were first described by Billroth in 1889.[1] Multiple primary cancers in one person are an uncommon occurrence. More and more people are found to have numerous primary malignancies as a result of improved cancer detection, screening, improved cancer treatment methods, and increased life expectancy.[2] MPMNs may be categorized into two groups: i) Synchronous, which are defined as cancers that develop within six months of the diagnosis of an earlier malignant neoplasm, and ii) Metachronous, which are defined as cancers that develop more than six months apart.[3] Numerous primary malignancies have significantly different prognoses depending on the kind and stage of cancer at the time of initial diagnosis.[4] MPMNs have a poorer prognosis and enhanced malignant behavior as compared to a single primary tumor.[3] Multiple primary tumors have been proven to be more likely to occur in females than in males. The colon, breast, lung, and skin melanoma are the most often seen locations linked to multiple primaries.[2] It is still challenging to treat individuals with synchronous multiple primary malignancies, especially those who are advanced.[4] Therefore, accurate and early histopathological diagnosis and differentiating them from metastatic tumors is essential.

Case Report:

An eighty years old male came to surgery out-patient department with the chief complaints of vomiting and pain in abdomen since 3 months. The vomiting

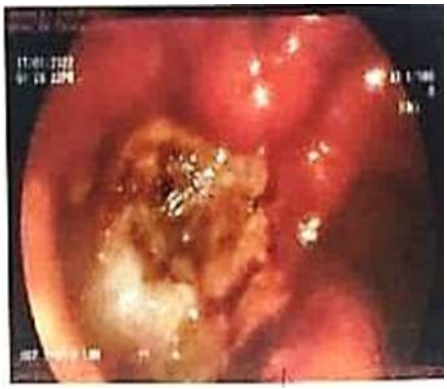
started within an hour of eating food, typical of gastric outlet obstruction. The pain was diffuse. He had history of loss of appetite. There were no associated bladder/bowel complaints. Patient had no history of hypertension/ diabetes/ active tuberculosis. No other significant history present.

On local examination, abdomen was soft and non-tender. No palpable mass was felt. Patient was advised contrast-enhanced CT scan and endoscopic examination.

CECT scan revealed circumferential wall thickening of the stomach involving antrum, pylorus and first part of duodenum. Multiple sclerotic areas were noted at various vertebral levels and hip bones. Few sub-centimetric homogenously enhancing lymph nodes were noted in pre- and para-aortic regions. These features were suggestive of gastric neoplastic etiology with sclerotic metastatic lesions.

Esophago-gastro-duodenoscopy revealed an ulcerated growth 3 x 3cm in the body of stomach suggestive of carcinoma? Stomach (Figure 1).

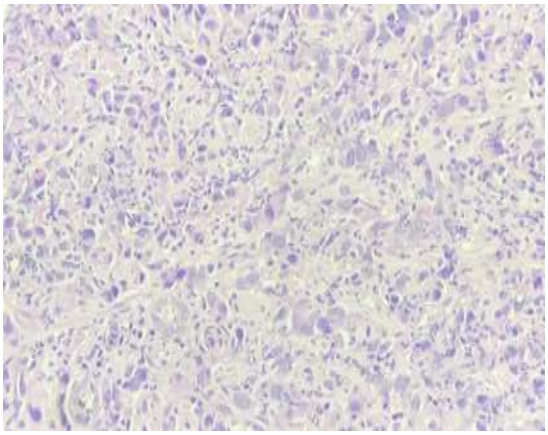
Figure 1: Esophago-gastro-duodenoscopy showing mass in the gastric body



Endoscopic biopsy was done and sent for histopathological examination.

Grossly, we received multiple irregular whitish soft tissue bits measuring 0.3 x 0.2 x 0.1cm. Microscopy revealed a tiny biopsy showing scattered, sheets and cords of round to oval tumor cells with enlarged hyperchromatic nuclei and scanty cytoplasm. Inflammatory infiltrate and necrotic material were also seen. Intervening stroma was fibrous and showed neutrophilic infiltrate. Surrounding fibroadipose tissue showed granulomas (Figure 2). Histological features were suggestive of poorly cohesive carcinoma with granulomatous inflammation in the surrounding fibroadipose tissue.

Figure 2: Photomicrograph showing scattered and sheets of pleomorphic tumor cells (Hematoxylin & Eosin stain 40x).



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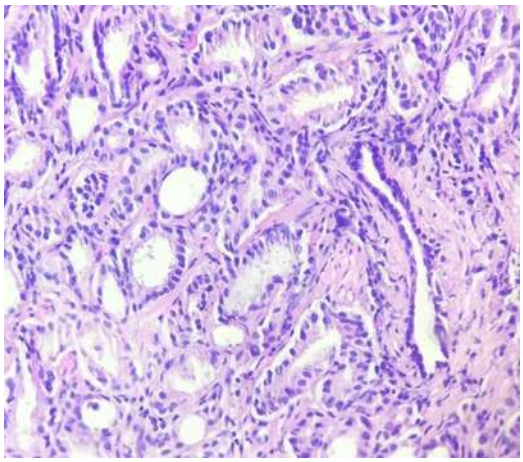
Our patient was evaluated further. He did not have any specific bladder complaints however, USG revealed significant post-void urine volume of 280cc. On digital rectal examination, there was grade IV prostatomegaly. Serum PSA level was 64 ng/dl. CECT showed moderate prostatic enlargement measuring 35cc with a calcific focus measuring 1 x 0.7mm. Prostate biopsy was done and sent for histopathological examination.

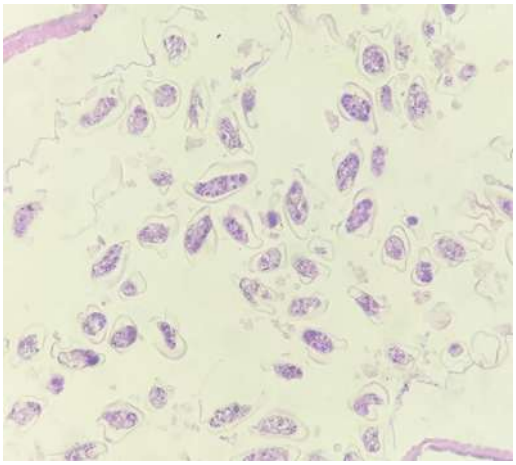
We received multiple slender whitish soft tissue bits measuring 1 x 0.8 x 0.4cm.

Microscopy revealed multiple irregular tissue fragments composed of prostatic glands and stroma. The glands were numerous, round to irregular, closely packed and lined by cuboidal epithelium. There was mild anisonucleosis with presence of occasional large hyperchromatic nuclei. Few glands showed stratification. Fibromuscular stroma was scanty and shows mild mononuclear inflammatory infiltrate. Occasional fragment of tissue showed tangentially cut gravid worms with eggs (schistosoma) (Figures 3,4). Diagnosis of low-grade adenocarcinoma was given.

Figure 3: Photomicrograph from the prostatic biopsy showing closely packed prostatic acini with multilayering in few glands (Hematoxylin & Eosin stain 40x).



Figures 4: Photomicrograph from the prostatic biopsy showing gravid schistosoma (Hematoxylin & Eosin stain 40x).



Immunohistochemistry revealed that the gastric biopsy was negative for PSA marker; which established that it was a second primary occurring in the patient.

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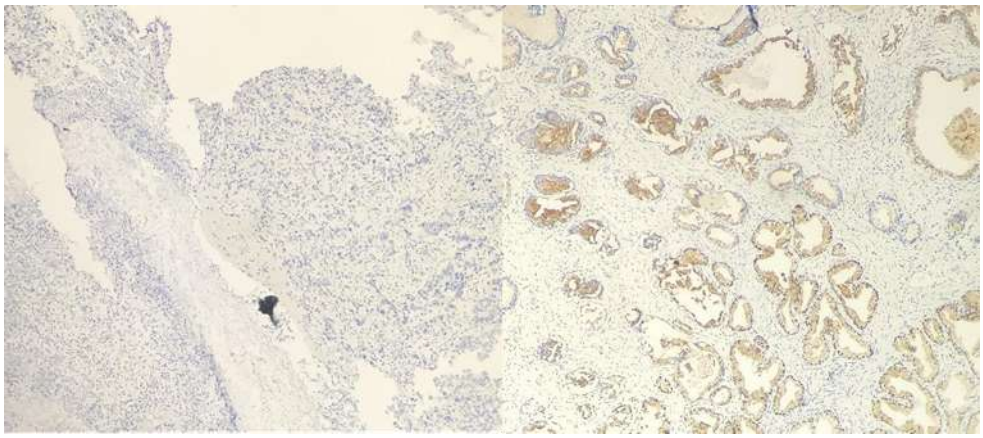
Figures 5: Photomicrograph showing gastric biopsy negative for PSA on IHC. (Right photomicrograph showing positive control).



Discussion:

Warren and Gates noted in 1932 that each suspected primary tumor to be evaluated in Multiple Primary Neoplastic Malignancies must be - 1. Histologically confirmed malignancy 2. Separate and different from the original place and 3. The chance that the second neoplasm is a metastasis should be ruled out[1]. Based on the primary causative factor, they are divided into three major types. The first type contains tumors associated with therapy, the second are tumors that are part of syndromes, and the third with neoplasms that may have common etiologic causes, such as genetic predisposition or exposure to the same environmental variables.[5] Furthermore, two or more malignancies might occur as a consequence of sheer chance. The probability of acquiring MPMN is significantly higher for women when compared to metachronous tumors, whereas synchronous lesions favor males slightly more than women.[5] The most prevalent tumor pairings (identified in most studies) - Males: Prostate cancer-digestive system malignancy (particularly colon cancer) and vice versa, and in women: Breast cancer-cancer of the contralateral breast. Finding an effective anticancer treatment that can treat all tumors without causing extra side effects or important pharmacological interactions is difficult when two or more advanced cancers are discovered in a patient at the same time.[6]

This is a case of co-occurrence of prostatic adenocarcinoma and poorly cohesive gastric carcinoma. Both tumors displayed distinctive histological characteristics and were found to be malignant. The probability of one being metastatic to the other is ruled out because of their unique and unrelated sites and histopathological nature and immunohistochemistry finding.[7] Further, the serum Prostate Specific Antigen level in our case was elevated. Both these conditions were consistent with the definition of MPMNs. This case is clinically significant since the patient's age increased the likelihood of MPMN. Both the tumors metastasize to bones (predominantly osteoblastic), which make it difficult to determine which primary tumor occurred first. Reports on the relationship between schistosomiasis and prostate cancer are scarce, owing in part to diagnostic limitations, and its prevalence is likely understated. Men with prostate cancer tend to be at the highest risk of MPMN, owing to its greater incidence as a primary tumor.[1] There are no accepted standards of care for MPMN therapy at this time. Each patient receives interdisciplinary, individually tailored treatment taking into account the kind of malignancy, illness stage, and general condition of the patient.

There are certain limitations to this case report. First, it was uncertain which cancer came first. Second, no genetic testing was performed to seek for probable oncogene(s) for multiple primary tumors.

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