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Case Report

Co-incidence of Fibrosarcoma and Esophagus Squamous Cell Carcinoma; A Case of Synchronous Second Primary Neoplasm

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ABSTRACT

Fibrosarcoma is one of the least common primary malignant tumors of skeleton-formative tissue. Also, primary esophagus squamous cell carcinoma (SCC) is a rare tumor accounting for 0.05–4% of all esophageal malignancies with aggressive behavior and poor prognosis. In this study, we aimed to present a 40-year-old man with the co-incidence of SCC and fibrosarcoma.

Case presentation: A 40-year-old man presented to the gastrointestinal clinic of Imam Khomeini Hospital Complex complaining about a three-month abdominal pain and progressive dysphagia. He also complained of severe pain in both flanks, dark color urine with blood clots, and a 10-kg weight loss in the past two months. A spiral CT scan revealed a 14×15×13 cm^3 lobulated solid mass in the right side of the pelvic. The pathology described malignant neoplastic tissue composed of cells with large hyperchromatic pleomorphic nuclei. Fibrosarcoma was diagnosed according to immunohistochemistry (IHC) results and morphology. The endoscopy noted a 5 cm ulcerative mass in the esophagus, which occupied less than 50% of the lumen. The pathology showed squamous cell carcinoma from the esophageal mass biopsy. Diagnostic laparoscopy denied any peritoneal seeding and liver or kidney metastases. We planned to conduct neoadjuvant chemoradiotherapy (cisplatin plus etoposide, and 40Gy external beam radiation therapy) and surgery for his esophageal SCC and radiotherapy for Fibrosarcoma.

This is the first report of the second primary esophageal SCC after fibrosarcoma in a 40-year-old man with no noticeable predisposing factor (such as smoking, immune modulator drug, radiation exposure, etc.). Further studies are needed for developing intervention strategies to reduce the risk or to improve the treatment of multiple primary neoplasms.

Keywords: Esophagus, Squamous Cell Carcinoma, Neoplasm, Fibrosarcoma

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INTRODUCTION

Fibrosarcoma is one of the least common primary malignant tumors of skeleton-formative tissue and has is less prevalent compared with osteogenic sarcoma and chondrosarcoma (1,2). It is defined as a highly malignant mesenchymal tumor originated from hyper-proliferating, transformed, and spindle-shaped fibroblasts. It can synthesize distinctive lesions characterized by interlacing bundles of collagen fibers that do not tend to form tumors of bone, osteoid, or cartilage (3). It is predominantly located in deep soft tissue or adjacent to bones with

a high probability of metastases (> 70%) (4). The tumor commonly involves patients in the fourth decade of their life, with a complaint of swelling or pain, and pathological fracture. Local tenderness, with or without palpable mass, is the most frequent presentation over the involved area (5). On the other hand, esophageal cancer is the sixth leading cause of cancer-related mortality according to the World Health Organization report (6), with a five-year survival rate of 20%-30% after curative surgery (7). It is considered a malignancy with a poor prognosis because of its late diagnosis.

Two major types of cancer occur in the esophagus: adenocarcinoma and squamous cell carcinoma (SCC). Primary esophagus SCC is a rare tumor accounting for 0.05–4% of all esophageal malignancies with aggressive behavior and poor prognosis because it often presents at an advanced stage (8). SCC is associated with alcohol (> 140 g/week), tobacco and tea, and very hot beverage consumption. Nutritional deficiencies like selenium, esophageal squamous dysplasia (ESD), human papillomavirus, achalasia, and genetic mutation play a role in esophageal SCC etiology (9).

Herein, we present a 40-year-old man with the co-incidence of SCC and fibrosarcoma as two rare malignancies, second primary cancer, with no noticeable predisposing factor (such as smoking, immune modulator drug, radiation exposure, etc.).

CASE REPORT

A 40-year-old man presented to the gastrointestinal (GI) clinic of Imam Khomeini Hospital Complex complaining about a three-month abdominal pain and recent dysphagia. He had experienced periumbilical pain with right grain radiation, which disabled his walking. He also complained of severe and tearing-like pain with no relation to activity in both flanks. He asserted concurrent nocturia, dark color urine with blood clots, and painful urination. Additionally, he had progressive dysphagia to both solid and liquid foods which started in recent months. He mentioned a 10-kg weight loss in the past two months. Moreover, he had no history of any disease. He denied any history of endoscopy or abdominal surgeries. His family history was negative for any cancer or GI disorders. Socially, he was married with no history of smoking and alcohol use and lived in a suburban area of Tehran. He denied taking any medications regularly.

On physical exam, prominent painful swelling in the right leg was found. Laboratory data demonstrated mild anemia with hemoglobin: 11.3g/dl, erythrocyte sedimentation (ESR): 56 mm/hour, ferritin: 368 µg/ml, and C-reactive protein (CRP): 35 mg/l. Creatinine raised from 1mg/dl to 1.6 mg/dl in the past two months. Increased levels of alkaline phosphatase (ALP) was another abnormal finding (raised from 32 U/L to 134 U/L in about two months). Anticoagulant system components and electrolytes were all within normal ranges. Urine analysis indicated calcium and oxalate crystals in urine. Prostate-specific antigen (PSA) was negative, and HBsAg and Anti-HCV were non-reactive.

CT scan with and without spiral venous contrast revealed a 14×15×13 cm^3 lobulated solid mass in the right side of the pelvic adhered to the superior ramus of pubis with irregular margin and adjacent calcifications separated from urinary bladder and intestine (figure 1). No other remarkable abnormality was detected in the CT scan. Pathology described malignant neoplastic tissue composed of cells with large hyperchromatic pleomorphic nuclei. Some of them had prominent eosinophilic cytoplasm admixed with mature lymphocytes and plasma cells. Some tumoral cells had a rhabdoid appearance. Mitotic figures were numerous and the stroma was fibrotic. Fibrosarcoma was diagnosed according to immunohistochemistry (IHC) results and morphology.

A CT scan of the lungs and mediastinum with contrast revealed a 2×3 cm^2 soft tissue mass with an intra-luminaire component without stricture in the mid to distal thoracic esophagus (figure 2). An 8×5 mm^2 para-esophageal lymph node was detected near the posterolateral section of the right esophagus. Another 8×6 mm^2 lymph node was observed near the left side of the trachea in the base of the neck. Two calcified granulomas were observed in the right inferior lung lobe. There was no pericardial effusion and lesion.

The patient was taken for endoscopy and colonoscopy; a 5 cm ulcerative mass had been noted from 30-35 cm of incisors, which occupied less than 50% of the lumen (figure 3). Colonoscopy was normal. Pathology showed squamous cell carcinoma from the esophageal mass biopsy. Diagnostic

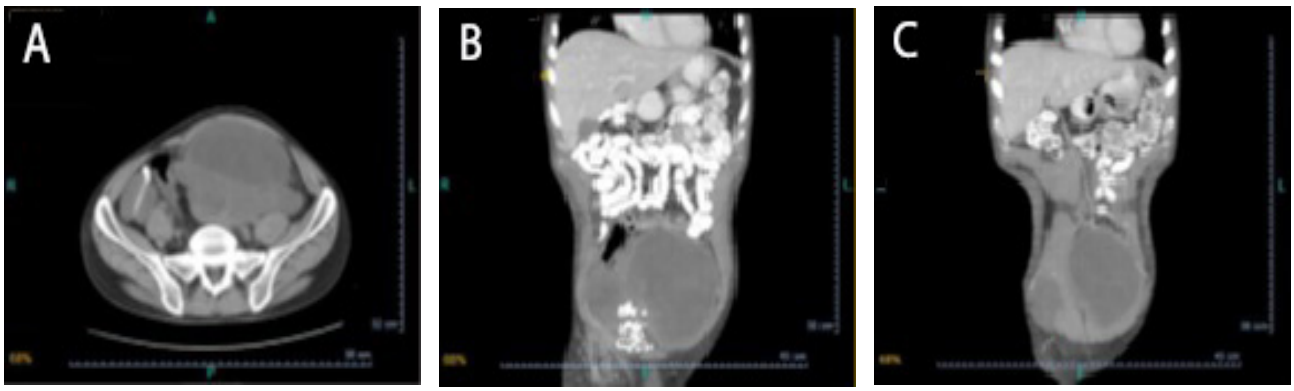

Fig. 1: Lobulated solid mass with irregular border in the right side of pelvic with adhesion to the superior ramus of pubis

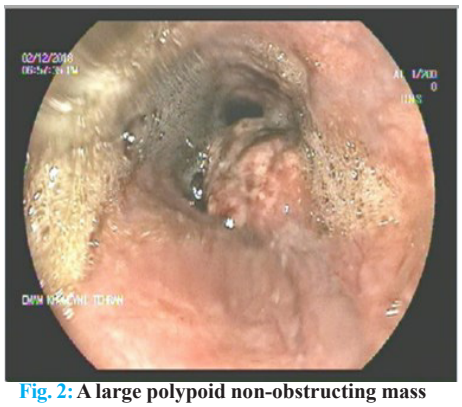

Fig. 2: A large polypoid non-obstructing mass involving the mid esophagus

laparoscopy denied any peritoneal seeding and liver or kidney metastases. Genetic evaluations were not done because of no inheritance pattern in this patient (negative family history) and a sporadic dominant of SCC.

We planned to conducted neoadjuvant chemoradiotherapy (cisplatin plus etoposide, and 40Gy external beam radiation therapy) and surgery for his esophageal SCC. On the other hand, the mainstay of all primary bone tumors treatment is amputation. Although radiotherapy can be effective, the treatment of choice for fibrosarcoma is conservative surgery. Because of the huge size of the pelvic tumor, surgery could not be chosen for treatment in this patient so he was initially referred to the pain management center of the hospital and encouraged for further palliative treatment. By tumor shrinkage in the process of radiotherapy, he was admitted for surgery after six months.

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

DISCUSSION

We presented a case with the co-occurrence of esophageal SCC and fibrosarcoma in a 40-year-old man. Both tumors were determined to be malignant, rare, and from a different category of neoplasms. The first one is a carcinoma that develops from epithelial cells and begins in a tissue that originated from the mesodermal, endodermal, or ectodermal layer during embryogenesis. The second one is a sarcoma which arises from the mesenchymal origin and can develop in any type of connective tissue (10,11). These conditions are consistent with the definition of multiple primary neoplasms (MPN). MPN diagnosis is based on the presence of the different histological patterns and anatomical localization of two or more neoplasms in a patient. It has become the third most common cancer leading to late non-relapse mortality. In fact; a patient with a first primary malignancy has a 33% risk of developing second primary malignancies during their lifetime (12). 2-6% of patients with primary esophageal cancer developed a second primary cancer, resulting in a 15% excess risk of MPNs (13-15). The most common sites for second primary cancers associated with esophageal SCC are the aerodigestive tract organs, head and neck cancer, suggesting that common risk factors play a role in multiple tumor development (16,17). This association has been described within the context of a ‘‘field cancerization’’ effect (18,19). Carcinogenesis

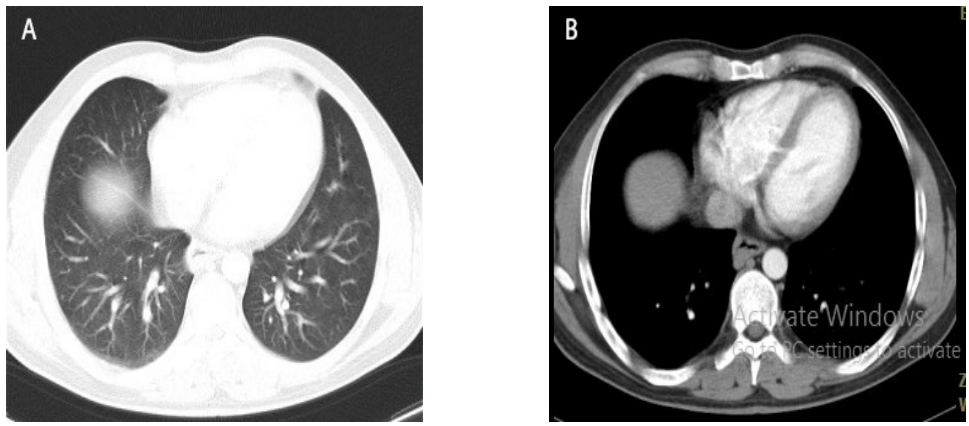

Fig. 3: **Tumoral mass in the mid esophagus which does not involve any major organs**

is a multi-step and complex process that requires the accumulation of changes in cell signaling, defense mechanisms, and the tissue microenvironment.

Most tumors (90–97%) are nonhereditary and can be attributed to the environment and lifestyle. Cancer risk depends also on the dose of carcinogens and the person's susceptibility, which is influenced by age, sex, genetics, ethnicity, and immune and nutritional status(20).

So, cancer survivors may be especially susceptible to developing second primary malignancies because of genetic syndromes, common etiological exposures, and the late effects of chemotherapy and radiotherapy.

CONCLUSION

This is the first report of the second primary esophageal SCC after fibrosarcoma. We described synchronous multiple primary neoplasms in a 40-year-old man with no noticeable predisposing factor (such as smoking, immune modulator drug, radiation exposure, etc.). A systematic assessment was conducted to understand the reasons why additional cancers occur in certain individuals. Further studies are needed for developing intervention strategies to reduce the risk or to improve the treatment of MPNs.

CONFLICT OF INTEREST

The authors declare no conflict of interests related to this work.

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