Case presentation and review of Solitary Fibrous Tumor

Abdelraof I. Al Agha, MBA, MPH, PA(ASCP)[1]; Ibrahim Al Agha[2]
[1]Department of Pathology, The University of Toledo Medical Center, [2] The University of Toledo, Toledo, Ohio, USA

Abstract

Solitary Fibrous tumor (SFT) is a rare mesenchymal tumor that can affect any part in the body. We are presenting a case of 62-year-old male who presented with epigastric pain and history of hypertension.

Introduction

SFT is a rare mesenchymal tumor that was thought to have pleural or submesothelial origin. During embryological development, mesodermal layer differentiates into mesenchymal tissue. This explains the different locations of the neoplasm. In SFT, the spindle cells arrange in an inconsistent pattern, and separated by collagen bands. Tumor mass vary in size and it can be secretory or non-secretory, benign or malignant. Benign and malignant are distinguishable by tumor size, capsule invasion, potential to metastasize, and number of mitosis per high power field (HPF). The rate of recurrence and metastasis directly correlate to adequacy of negative margin taken during the excisional procedure.

Case

A 62- year-old man presented to emergency department (ED) with complaints of epigastric pain that radiates to his upper chest and right shoulder. His lab work was unremarkable. The computed tomography (CT) showed a multilobulated mass in the right upper lobe (RUL) without lymphadenopathy (Fig. 1). Fine needle aspiration (FNA) biopsy demonstrated a spindle cell malignancy consistent with solitary fibrous tumor (Fig. 2).

Gross Specimen

Soft tissue excision of right chest specimen revealed an 841-gram multilobulated, red-tan, rubbery to firm mass measuring 17.5 x 11 x10 cm. The outer surface was smooth and glistening with some adhesions and without any evidence of invasion through the fibrous capsule (fig. 3). The cut surface was whorled, solid, and heterogeneous with multiple areas of hemorrhage and necrosis (Fig. 4). Representative sections were taken to confirm the diagnosis and evaluate the adequacy of the margins.

Images

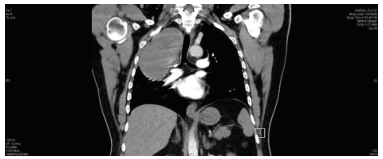

Fig. 1: CT of chest

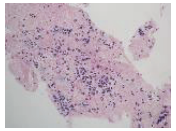

Fig. 2: H&E (200x)

Fig. 3: Outer surface

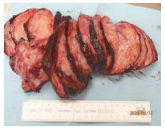

Fig. 4: cut surface

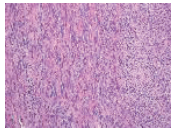

Fig. 5: H&E (200x)

Fig. 6: STAT6 IHC (200x)

Results

Light microscopy of the specimen revealed large, scattered coagulative necrosis foci with the tumor. Lack of blood supply can lead to necrosis. Numerous spindle-shaped cells arranged in single and loose aggregates. The cytoplasm is finely vacuolated and scant. The nuclei are oval to spindle with smooth nuclear contour and homogenous, stripped chromatin. Variation in size between cells is minimum and nucleoli are inconspicuous.

Immunohistochemistry (IHC)

SFT cells had strong positive stain with vimentin and negative for cytokeratin. This rules out the epithelial origin of the tumor. The IHC showed a strong reactivity with STAT6 stain, which is specific and sensitive marker (Fig. 6). The mass also showed negative reactivity with DOG1, ERG, FLI1 and CAM 5.2 stains, which rules out GIST, vascular origin, cartilaginous origin, sarcoma, and metastasis.

Conclusion

Solitary fibrous tumor is a rare mesenchymal tumor that was differentiated from mesothelioma tumor by IHC that pointed out the mesenchymal origin. SFT can vary in size and location. Despite the benign nature of the majority of tumors, malignancy and metastasis still exist. Optimal standard radiation therapy or chemotherapy treatment of recurrent or metastatic tumor is still uncertain. The surgical intervention with abundant negative margin has a great implication on the recurrence and survival rates. IHC plays an important function in establishing definitive diagnosis along with microscopic and imaging studies. STAT6 is the standard of testing with high specificity and sensitivity. It is imperative to have adequate negative margins and important for the pathologists' assistants who gross the specimen to submit adequate sampling of the margins for microscopic evaluation.