Case Report

Primary Tracheal Epithelioid Angiosarcoma - Uncommon Tumor at an Uncommon Site

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Published: November 10, 2015

Abstract
We report a rare case of an elderly gentleman presenting with hemoptysis and stridor secondary to a primary tracheal Epithelioid Angiosarcoma (EAS). EAS continues to be a rare clinical entity with its occurrence in the trachea having been described only twice before to our knowledge. This case also demonstrates the importance of Immunohistochemistry in accurately making a diagnosis of EAS as the epithelioid features mimic other epithelial tumors like adenocarcinomas. In the absence of definitive guidelines, treatment decisions are often made on a case-by-case basis. The inability to perform surgical resection led to a poor outcome in our patient with second-line radiation therapy failing to achieve remission.

Keywords: Epithelioid Angiosarcoma; Stridor; Tracheal tumors

Introduction:
Primary tracheal tumors are a rare clinical entity, with a reported incidence of only 2.6 cases per million according to the SEER database [1]. The majority of tumors in adults are malignant, with more than 50% being squamous cell carcinomas. While pulmonary angiosarcomas are well described [2], tracheal angiosarcomas remain extremely rare, with only a few case reports described so far [3]. Angiosarcomas are malignant neoplasms of endothelial cells lining vessel walls, arising in either blood or lymphatic vessels. They are relatively rare, accounting for 1% of all soft tissue sarcomas [4]. They are further classified into cutaneous, visceral and soft-tissue types. A unique subtype in which the endothelial cells have a predominant epithelioid appearance is defined as epithelioid angiosarcoma (EAS) [5]. The occurrence of the epithelioid subtype in the trachea is extremely rare, having been described only in a few cases before [6,7]. Primary EAS of the trachea thus represents an uncommon tumor at an uncommon site. We report another case of primary epithelioid angiosarcoma of the trachea, contributing to the sparse literature on this rare disease.

Case report:
Our patient was an 88- year old gentleman with past oncologic history significant for multiple basal cell cancers treated successfully with resection and a right renal cell carcinoma resected surgically 25 years ago. His medical history was otherwise significant for hypertension, atrial fibrillation and sensorineural hearing loss. He was a retired truck driver by profession with no known chemical or radiation exposure. He initially presented with cough for one month duration with an unremarkable chest X-ray. After failing a course of antibiotic treatment for presumed bronchitis, he developed hemoptysis and difficulty breathing. He was then evaluated with a nasopharyngolaryngoscopy which revealed a subglottic soft tissue mass. Subsequent imaging with CT scan of the neck demonstrated a soft tissue mass on the right side of the trachea below the level of the...
vocal cords measuring 3X2 cm in size with 65% obstruction of the tracheal lumen (Figure 1,2). There was also moderate compression of the airway without any cervical lymphadenopathy. He also had bilateral sub-centimeter pulmonary nodules that were stable from a CT scan performed a year before. A CT of the abdomen also did not reveal any other primary source or metastatic disease.

Thoracic surgery was consulted to perform a biopsy and possible debulking of the tumor for symptom relief. Rigid bronchoscopy revealed a necrotic and hyper-vascular mass originating from the right wall of the proximal trachea. It extended from the level of the cricoid to the 3rd and 4th cartilaginous rings. Laser photocoagulation and mechanical debulking were performed which improved tracheal patency to 90%.

Pathology showed malignant neoplasm most consistent with angiosarcoma, epithelioid type (figure 3). Immunohistochemical stains demonstrated positivity for CD31, pan-cytokeratin AE1/AE3, cytokeratin 7 and CD10 focal weak positive. CK20, TTF-1, napsin, S100, p63, thyroglobulin and RCC were negative.
Figure 3: Hematoxylin Eosin image X 200 magnification demonstrating epithelioid plump cells forming sheets and vascular spaces.

He was not considered a candidate for surgical resection due to his age, anatomical location of the mass and technical difficulty of the procedure. A month after the debulking procedure, he developed stridor necessitating a palliative tracheostomy. He was then started on radiation therapy and planned for a total dose of 4600 centiGray over a 5-week period. After 2 weeks of radiation therapy, he developed odynophagia secondary to radiation-induced esophagitis, necessitating PEG tube placement. He then developed clostridium difficile colitis and a pleural effusion at which point the patient and family decided to forego active treatment and transitioned to hospice. The patient expired 3 months from the date of diagnosis.

Discussion:
Tracheal tumors often present with non-specific symptoms like cough, hoarseness, hemoptysis, dyspnea and wheezing. Chest radiography is commonly obtained under these circumstances, but has poor sensitivity for detecting tracheal pathology. Stridor is the characteristic symptom that prompts assessment of the upper airway, but this unfortunately represents an advanced tumor stage with significant airway compromise. Computerized Tomography is helpful in identifying the location and extent of the mass and also rule out an occult primary. Our patient initially presented with non-specific symptomatology and an unremarkable chest X-ray, which delayed diagnosis. This probably allowed the tumor to progress leading to significant airway compromise and stridor.

Nasopharyngolaryngoscopy allows bedside assessment of the hypopharynx and larynx with minimal patient discomfort. In our patient, it proved useful in identifying the presence of the tracheal mass below the level of the vocal cords. After identification of a tracheal mass, bronchoscopy remains the most useful modality for obtaining tissue biopsy and for palliation in patients not suitable for surgical resection. Rigid bronchoscopy is preferred in most patients with large tumors or high risk of perforation or hemorrhage while flexible bronchoscopy is preferred in the presence of severe stenosis. Heat therapies (electrocautery, Laser and argon plasma coagulation) achieve immediate relief in significant obstruction while cryotherapy, brachytherapy and photodynamic therapy have a delayed effect [8]. Tracheal stenting is also used to palliate significant stenosis with major complications being stent migration and decreased patency over time [9]. The various modalities are often used in combination to achieve maximum therapeutic benefit. Mechanical debulking and laser coagulation effectively restored tracheal patency in our patient.

A reliable diagnosis of EAS requires immunochemistry, as the epithelioid cells appear similar to epithelial malignancies like adenocarcinoma on histopathology [5]. EAS stain positive for factor VIII, CD31, Fli-1 and vimentin and stain negative for S100, confirming endothelial differentiation [5]. Our patient was initially diagnosed with adenocarcinoma, with immunochemistry finally leading to the correct diagnosis.
Coincidently, both angiosarcomas and primary tracheal tumors have a peak incidence in the 7th decade of life [1,10]. While EAS has been reported in a variety of soft tissue sites [11-17], primary EAS of the trachea is a rare disease with only a few cases population make treatment decisions challenging. Guidelines and protocols do not exist to guide decision-making. EAS is a highly aggressive endothelial malignancy with early metastatic potential, and advancing age further worsens prognosis [10]. Surgical resection is considered the treatment of choice for localized disease. Though our patient had localized disease, the presence of comorbidities and advanced age renders him a poor surgical candidate. The rapidity with which he redeveloped symptomatic tracheal obstruction within 2 months after endoscopic tumor debulking highlights the aggressive nature of EAS. Radiotherapy and chemotherapeutic agents like Doxorubicin, Ifosfamide, Taxanes and Gemcitabine are widely used in the treatment of sarcomas, but their efficacy in EAS has not been well studied due to the rarity of the disease. To conclude, we report a rare case of primary EAS of the trachea, with surgery remaining the best method of cure for localized disease and bronchoscopy offering palliation in unresectable tumors.

References