Epithelioid Hemangioendothelioma Presenting as Unilateral Vocal Fold Paralysis: A Case Report and Literature Review

Justin T. Lui, MD1, Anita T. Kang, MD2, Lisa M. DiFrancesco, MD3, S. Joseph Warshawski, MD1, and Derrick R. Randall, MD, MSc1

A 52-year-old male presented with a 2-month history of weak, high-pitched dysphonia associated with decreased exercise tolerance following a viral upper respiratory tract infection. He denied any constitutional symptoms, early satiety, hematemesis, or melena. His medical, family, and social histories were noncontributory. Cranial nerve examination and head and neck assessments were unremarkable. Flexible laryngoscopy with stroboscopy demonstrated a right-sided vocal fold immobility with a large glottic gap; no upper aerodigestive tract lesions were present.

On ultrasonography (US), a large, irregular, heterogeneous mass in level IV of the right neck was identified, with complete effacement of the internal jugular vein and displacement of the common carotid artery. An ensuing computed tomography scan characterized the heterogeneous mass to contain microcalcifications deep to the clavicle, in the right supraclavicular fossa, measuring 2.1 cm × 2.9 cm × 3.8 cm. A transcervical excisional biopsy was performed following nondiagnostic noninvasive biopsy attempts. The mass lied adjacent to the junction of the right brachiocephalic and right internal jugular veins and was adherent to the anterior scalene muscle inferiorly. Histopathologic assessment demonstrated a bland spindle cell lesion infiltrating in cords and small nests. Neither necrosis nor mitotic activity was seen. Positive immunohistologic staining for CD31, CD34 and ETS-related gene confirmed the diagnosis of epithelioid hemangioendothelioma (EHE; Figure 1). Prior to initiating therapy, magnetic resonance imaging was obtained (Figure 2). Morbidity associated with the extent of surgery was considered too great for complete surgical resection and radiation therapy (5000 cGy) was determined to be the optimal therapy. One-year repeat imaging found a reduction in the size of the index tumor, but multiple lesions suspicious for pulmonary metastases were seen.

First described in 1975, EHE represents less than 1% of all vascular tumors with a prevalence of less than 1 in 1 million people, most commonly affecting liver, lung, and bones.1 Age at diagnosis ranges from 7 to 83 years, with a mean survival time of 4.6 years.1 World Health Organization classifies EHE as a locally aggressive malignancy with metastatic potential.1 Multi-organ involvement, age greater than 55, and male sex have been identified to be poor prognosticators.1 As a rare occurrence in the head and neck, presentation of EHE as unilateral vocal fold paralysis has yet to be documented.2 Pathologic diagnosis of EHE is challenged by the cytologic similarity to other malignancies such as adenocarcinoma, melanoma, or epithelioid angiosarcoma.3 Marked variation in prognosis and treatment modalities between these diagnoses makes correct identification imperative.3 Histologic findings of EHE include cords, solid nests, short strands of eosinophilic endothelial cells (epithelioid), and spindle-shaped tumor cells.1,2 Lumina-containing erythrocytes, termed intracytoplasmic lumina, may develop in various sizes and cause a signet-ring appearance through cell blunting.1,2 Immunohistochemical stains are critical for confirming vascular endothelial

1 Section of Otolaryngology–Head and Neck Surgery, Department of Surgery, University of Calgary, Alberta, Canada
2 Cumming School of Medicine, University of Calgary, Alberta, Canada
3 Department of Pathology & Laboratory Medicine, University of Calgary, Alberta, Canada

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Corresponding Author:
Derrick R. Randall, MD, MSc, Section of Otolaryngology–Head and Neck Surgery, Department of Surgery, University of Calgary, ENT Clinic, RM 21304E, 1820 Richmond Rd SW, Calgary, Alberta, Canada T2T 5C7. Email: d.randall@ucalgary.ca

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Figure 1. H & E stains. A, Cords and strands of epithelioid cells are present within a fibrous stroma (H & E, ×10 magnification). B, Clusters of rounded cells with a vague vasoformative pattern are present (H & E, ×20). C, Epithelioid cells with mild atypia cluster together, forming primitive lumina (H & E, ×40). D, Anti-CD31 antibody highlights the endothelial nature of the cells (anti-CD31 antibody, ×20).

Figure 2. Magnetic resonance imaging Dixon method (uniform fat suppression). Axial and coronal views of the right supraclavicular epithelioid hemangioendothelioma (EHE) deep to the medial aspect of the right clavicle associated with significant compression and occlusion of the right internal jugular and brachiocephalic veins. *Epithelioid hemangioendothelioma.
markers including CD31 and CD34, with the former being more specific to EHE. Cytokeratin expression is nonspecific in EHE. Histologic poor prognosticators of EHE are the presence of mitotic activity, the presence of spindle cells, and larger tumor size.

As a result of the rarity of EHE, there is no established treatment modality or combination of modalities. Other case reports of head and neck EHE demonstrated aggressive behavior, which resulted in recurrence in less than a year despite surgical resection and radiotherapy postoperatively. For small and limited lesions of EHE in areas outside of head and neck region, successful curative resections have achieved good outcomes. The benefit of adjuvant radiotherapy and chemotherapy in EHE has yet to be confirmed, with radiotherapy chosen to control residual local disease and chemotherapy chosen in cases of widespread disease. Treatment outcomes with radiotherapy alone is ambiguous. In pulmonary presentations, radiotherapy alone has been ineffective, whereas in bone presentations good control has been obtained with radiotherapy alone.

Epithelioid hemangioendothelioma is a rare tumor affecting many different areas of the body, resulting in various clinical presentations. Unilateral vocal fold paralysis should raise high clinical suspicion of malignancy and requires radiologic investigation. First-line radiologic investigation should include chest X-ray to rule out mediastinal and intrathoracic causes and an US to evaluate neck structures. Computed tomography scan should be reserved for progressive or persistent cases, as well as in patients with high risk factors for malignancy. Epithelioid hemangioendotheliomas presenting in the head and neck region are often aggressive and result in fatal outcomes. Therefore, prompt treatment should be discussed with the patient with curative resection as first-line therapy and adjuvant radiation and chemotherapy in cases where curative resection is not possible.

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**ORCID iD**
Justin T. Lui https://orcid.org/0000-0002-6843-4249

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