Primary melanoma of the esophagus, a diagnostic challenge

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Summary

Primary melanoma of the esophagus is a rare condition. Its diagnosis can be challenging, as its presentation is similar to that of other esophageal malignancies, especially when melanin is not evidently expressed in the melanoma. We report a case of esophageal melanoma in a 59-year-old Chinese male, whose histological diagnosis was confirmed from the esophagectomy specimen.

1. Introduction

First described by Baur in 1906, primary malignant melanoma of the esophagus occurs very rarely, with an incidence of 3.6 in 1 billion, and it contributes to 0.1−0.2% of all esophageal neoplasms. From 2000 to 2011, of the 134 cases of esophagectomies performed in our institution for esophageal carcinoma, only one had esophageal melanoma; we herein present a case report of this patient.

2. Case report

This is a case report of a 59-year-old Chinese male who presented with a 2-week history of progressive dysphagia without regurgitation and any other constitutional symptoms, and with no known medical history.

An esophagogastroduodenoscopy was performed, which revealed a nonpigmented polypoidal mass 25 cm from the incisor (Fig. 1), antral gastritis, and duodenitis. A biopsy of the polypoidal mass revealed a poorly differentiated invasive squamous cell carcinoma. Computed tomography (Fig. 2) confirmed a large (4.3 × 2.1 cm²), homogenously enhancing lobulated mass in the esophagus at the level of the aortic arch, extending just distal to the carina, with enlarged right upper paratracheal lymph nodes.

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without pulmonary or hepatic metastasis. A positron emission tomography (PET) scan further demonstrated fluorodeoxyglucose (FDG) avidity only of this esophageal mass and the right upper paratracheal lymph nodes without any evidence of metastasis. A lung function spirometry test was performed, whose results were within normal limits; tracheoesophageal fistula and endobronchial lesions were ruled out by bronchoscopy.

Although neoadjuvant chemoradiotherapy was offered to downstage the disease, the patient opted to proceed directly with surgery. He underwent an elective three-staged esophagectomy with an uncomplicated recovery. He tolerated diet on Postoperative Day 8 and was discharged home on Postoperative Day 10. Four months postsurgery, a repeat PET scan shows no evidence of disease recurrence.

On gross examination, a brown-tan lobulated tumor (4.5 cm) was noted in the distal esophagus. Histologic examination revealed sheets of malignant cells displaying epitheloid and spindle cell morphology, interspersed with melanin pigments; adjacent mucosa showed melanocytic proliferation with transepidermal migration (Fig. 3A). Tumor cells displayed vesicular chromatin, prominent nucleoli, and brisk mitotic activity (20–30/10 hpf). Immunostains were positive for S100, HMB45, and Melan-A, whereas cytokeratin markers were negative (Fig. 3B). The right upper paratracheal lymph node was mostly replaced by metastatic melanoma.

3. Discussion

De la Pava et al. first described the presence of melanocytes at the interface between the epithelium and the lamina propria of the esophageal mucosa. Esophageal melanosis, or melanocytosis, is a rare condition of benign melanocytic proliferation found in 0.07–2.1% of gastrosopies and is believed to be a precursor of primary esophageal melanoma. Esophageal melanocytosis is associated with chronic esophagitis, reactive epithelial changes, Laugier–Hunziker syndrome, and Addison’s disease, and has been reported in patients with anal melanoma, esophageal squamous cell carcinoma in situ, and pulmonary adenocarcinoma.

Figure 1: Esophagogastroduodenoscopy illustrating the non-pigmented polypoidal mass 25 cm from the incisor (red arrow). A biopsy of the polypoidal mass revealed a poorly differentiated invasive squamous cell carcinoma.

Figure 2: Preoperative radiological imaging demonstrating the patient’s esophageal carcinoma with an enlarged right paratracheal lymph node. Computed tomography imaging confirmed (A) a large (4.3 × 2.1 cm²), homogeneously enhanced lobulated mass in the esophagus (marked by an asterisk) at the level of the aortic arch, extending just distal to the carina, and (B) an enlarged right upper paratracheal lymph node (2.0 × 1.5 cm²), and (C and D) their corresponding PET images demonstrating FDG avidity, respectively.
Clinically, primary esophageal melanoma presents similarly to other esophageal malignancies. Endoscopically, it often presents as a solitary polypoidal mass in the middle or distal third of the esophagus, which may be pigmented or nonpigmented, although multiple lesions have been reported in 12% of cases. The challenge in clinching a histological diagnosis arises when the biopsy specimen lacks melanin granules, misguiding the diagnosis as epithelial carcinomas, although the latter typically present in the proximal third of the esophagus. Likewise, the malignant cells in our patient displayed a diverse morphology, making it difficult to be identified from the initial biopsy and requiring an en bloc resection to clinch the histological diagnosis.

Immunohistochemical staining of biopsy specimens with melanocytic-specific markers such as HMB45 antibodies can increase the accuracy of a pretreatment diagnosis; however, one may question the efficacy of such a routine screening stain, given the rarity of primary esophageal melanomas. On presentation, metastatic disease is present in approximately 50% of patients (31% hepatic, 29% mediastinal, 18% pulmonary, and 13% cerebral), with a mean survival rate of less than 5% at 5 years, a median survival rate of 10 months, and a disease-related mortality of 85%.

The primary treatment is surgical excision with discretionary lymphadenectomy for operable melanomas, with total or near-total esophagectomy offering the best survival outcome (5 years vs. 9 months for local resection). There is a role for immunomodulatory therapy in patients with metastatic disease and for palliative external beam radiotherapy in those with unresectable esophageal melanomas. Newer treatment modalities, such as intraluminal brachytherapy and laser photoablation, have shown great promise, but not without its potential toxicities, such as esophagitis, ulcerations, strictures.

4. Conclusion

Primary melanoma of the esophagus is a rare condition that may pose diagnostic difficulty, especially if it is non-pigmented and lacks melanin granules in a biopsy specimen. We propose that an esophageal melanoma be considered as a differential diagnosis if the tumor is polypoidal. On diagnosis, one should rule out a primary melanoma peripherally, lest the management strategy be altered for a metastatic melanoma. Total or near-total esophagectomy offers the best survival outcome, and newer adjuvant therapies such as brachytherapy and photoablation show promising potential.

References