Endoscopically Refractory Hemorrhage from Advanced Locoregional Esophageal Adenocarcinoma: Photodynamic Therapy as an Underutilized Therapeutic Option

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Patient History

This 77-year-old Caucasian male presented to the emergency room with fatigue, dyspnea and melena. The patient had a history of rectal cancer treated with surgical resection and radiation 25 years ago and two recent transient ischemic attacks (TIA) for which he was on daily Aspirin and Plavix.

Examination

At the time of presentation, he was mildly tachypneic but hemodynamically stable.
On examination, he was found to have no palpable adenopathy, and a normal abdominal and pulmonary exam. He had a hemoglobin level of 8.1 g/dL and a positive stool guaiac test. During further questioning he reported having dysphagia for 2 weeks. He was admitted to the hospital and an upper endoscopy demonstrated a near obstructing distal esophageal mass with intraluminal blood (Figure 1). Despite discontinuation of antiplatelet agents, he continued to hemorrhage and a subsequent drop in his hemoglobin required a 4-unit blood transfusion. Our service was then consulted for further evaluation and management.

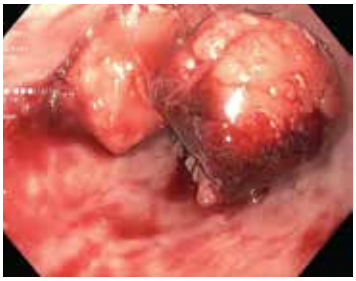

Figure 1 – Initial Endoscopy showing a bleeding esophageal cancer.

Diagnostic Evaluation

A repeat upper endoscopy reconfirmed previous exam findings. Argon plasma coagulation (APC) was performed during this endoscopy in an attempt to control the hemorrhage from the tumor which was actively oozing. An endoscopic ultrasound (EUS) evaluation during this endoscopy and a subsequent PET/CT scan established the clinical stage of T3N0M0 (Figure 2) and the result of tumor biopsies were returned as well-differentiated esophageal adenocarcinoma (Her2 1+).

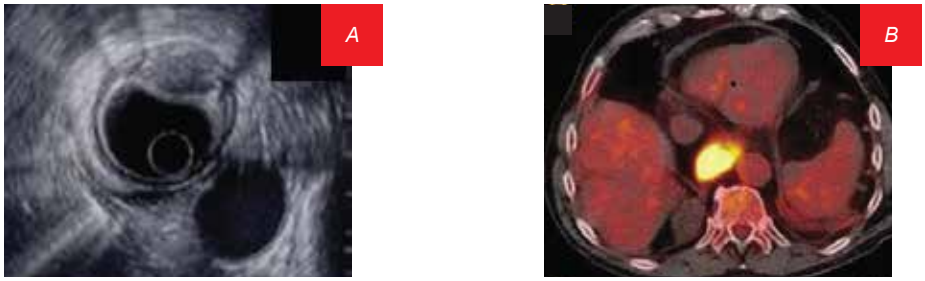

Figure 2 – A) Endoscopic ultrasound (EUS) and B) PET/CT scan showing the lesion.

Despite APC treatment the patient continued to hemorrhage and the decision was made to initiate photodynamic therapy as a local therapy for the purposes of hemorrhage control and endoluminal debulking for the alleviation of dysphagia. Radiation oncology was consulted in order to evaluate the patient for emergent radiotherapy for hemorrhage control, however because the patient had potentially resectable disease, we wished to preserve the option for the use of induction radiochemotherapy.

Course of Treatment

The patient received 2 mg/kg IV infusion of Photofrin (porfimer sodium) for Injection, and an upper endoscopy with photodynamic therapy was scheduled 3 days after this injection (Figure 3). A 5 cm diffusing fiber was then positioned appropriately and light activation with a total of 300 Joules/cm2 for 750 seconds was applied with a nominal wavelength of 630 nm ± 3 nm. A repeat upper endoscopy the following day demonstrated control of hemorrhage (Figure 4), stabilization of his hemoglobin, and improvement in the intraluminal space. PDT was repeated during this endoscopy with similar dosimetry setting, and the patient was then discharged to home.

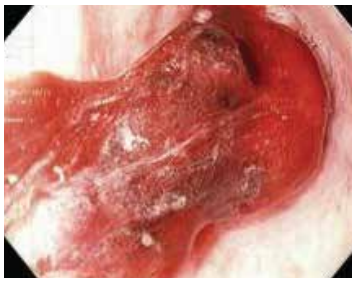

Figure 3 – Endoscopy after argon plasma coagulation and before PHOTOFRIN® (porfimer sodium) treatment.

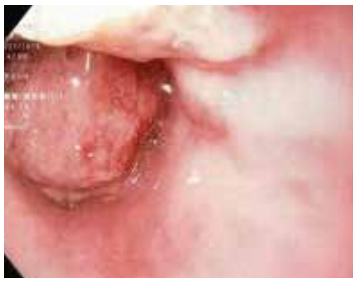

Figure 4 – Endoscopy after PHOTOFRIN® (porfimer sodium) treatment showing no more bleeding.

Clinical Outcomes

During clinical follow-up, the patient reported no further hemorrhage and his hemoglobin remained stable. The dysphagia significantly improved, and he was able to tolerate a regular diet with adequate intake, and this eliminated the need for jejunostomy feeding tube placement. After completion of his induction radiochemotherapy he was scheduled for a minimally invasive esophagectomy.

Discussion

Photodynamic therapy (PDT) is increasingly used in the management of dysphagia in patients with obstructing tumors. This clinical example demonstrates that PDT can also be utilized in the control of tumor hemorrhage when other local treatments fail to achieve hemostasis. In the current case, the effect of PDT in the control

of hemorrhage was immediate and the impact on dysphagia was durable during the course of induction therapy and eliminated the need for enteral access for nutritional support. Use of PDT also allowed him to remain on course for traditional therapy without use of radiation outside of induction therapy.

The information contained in this case study has been supplied by the medical professional whose name appears here. The advice, opinion, statements, materials and other information expressed and contained in this case study are from the authors and reflect their personal experience with the specific patient. Results may vary. Pinnacle Biologics, Inc. makes no claim that similar treatment will result in a similar outcome.

Please see accompanying Important Safety Information and full Prescribing Information for PHOTOFRIN® (porfimer sodium) for Injection at **www.photofrin.com**

PHOTOFRIN® (porfimer sodium) Indications

- Palliation of patients with completely obstructing esophageal cancer, or of patients with partially obstructing esophageal cancer who, in the opinion of their physician, cannot be satisfactorily treated with Nd:YAG laser therapy.

- Treatment of microinvasive endobronchial non–small cell lung cancer (NSCLC) in patients for whom surgery and radiotherapy are not indicated.

- Reduction of obstruction and palliation of symptoms in patients with completely or partially obstructing endobronchial NSCLC.

- Ablation of high-grade dysplasia (HGD) in Barrett's esophagus (BE) patients who do not undergo esophagectomy.

Important Safety Information About PHOTOFRIN® (porfimer sodium) for Injections

PHOTOFRIN® (porfimer sodium) is contraindicated in patients with porphyria. Photodynamic therapy (PDT) is contraindicated in patients with an existing tracheoesophageal or bronchoesophageal fistula and patients with tumors eroding into a major blood vessel. PDT is not suitable for emergency treatment of patients with severe acute respiratory distress caused by an obstructing endobronchial lesion because 40 to 50 hours are required between injection with PHOTOFRIN and laser light treatment. PDT is not suitable for patients with esophageal or gastric varices, or patients with esophageal ulcers >1 cm in diameter. Tracheoesophageal or bronchoesophageal fistula can occur if esophageal tumor is eroding into trachea or bronchial tree. Gastrointestinal perforation can occur. There is a high risk of bleeding in patients with esophageal varices and for fatal massive hemoptysis with endobronchial tumors that are: large, centrally located; cavitating; extensive, extrinsic to the bronchus. After treatment of high-grade dysplasia (HGD) in Barrett's esophagus (BE), monitor endoscopic biopsy every three months, until four consecutive negative evaluations for HGD have been recorded. Photosensitivity can be expected; ocular sensitivity is possible. Allow 2-4 weeks between PDT and subsequent radiotherapy. Substernal chest pain may occur after treatment. Treatment-induced inflammation can cause airway obstruction. Administer with caution to patients with tumors in locations where treatment-induced inflammation can obstruct the main airway. Esophageal stenosis occurs frequently after treatment of HGD in BE. Patients with hepatic or renal impairment may need longer precautionary measures for photosensitivity (possibly more than 90 days). Thromboembolic events can occur following photodynamic therapy with PHOTOFRIN. May cause embryo-fetal toxicity; advise females of reproductive potential of the potential risk to a fetus and to use effective contraception.

MOST COMMON ADVERSE REACTIONS reported during clinical trials (>10% of patients) are:

Esophageal Cancer: Anemia, pleural effusion, pyrexia, constipation, nausea, chest pain, pain, abdominal pain, dyspnea, photosensitivity reaction, pneumonia, vomiting, insomnia, back pain, pharyngitis.
Obstructing Endobronchial Cancer: Dyspnea, photosensitivity reaction, hemoptysis, pyrexia, cough, pneumonia.
Superficial Endobronchial Tumors: Exudate, photosensitivity reaction, bronchial obstruction, edema, bronchostenosis.
High-Grade Dysplasia in Barrett's Esophagus: Photosensitivity reaction, esophageal stenosis, vomiting, chest pain, nausea, pyrexia, constipation, dysphagia, abdominal pain, pleural effusion, dehydration.

Inform patients to report adverse reactions. All patients who receive PHOTOFRIN will be photosensitive for at least 30 days and should be warned about this and counselled to take appropriate precautions. Laser treatment should not be given if an overdose of PHOTOFRIN is administered.

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If there are any questions regarding the information provided, please contact Medical Information Department at **1-866-248-2039**.

Please see full prescribing information for PHOTOFRIN.

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PDT with PHOTOFRIN® [porfimer sodium] for injection

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