SHORT COMMUNICATION

Laser and photodynamic therapy for esophageal cancer

Mlkvy P, Makovnik P, Majek J, Slezak P, Kollar T

St. Elizabeth Oncology Hospital, Bratislava, Slovakia. **bll@fmed.uniba.sk**

Abstract

Esophageal cancer has a poor prognosis. The diagnosis in clinical practise is often made in advanced stages when curative treatment is impossible. Overall five year survival is reached only in 10 % of patients and a palliative treatment is indicated in 60 % of patients. From these patients one year survival could be observed in 55 % and five year survival only in about 20 % of patients. Progressive dysphagia is responsible for the poor quality of life. (Ref. 4.)
Key words: laser and photodynamic therapy, esophageal cancer.

Esophageal cancer has a poor prognosis. The diagnosis in clinical practise is often in advanced stages when curative treatment is impossible. Overall five year survival is reached only in 10 % of patients and a palliative treatment is indicated in 60 % of patients. From these patients one year survival could be observed in 55 % and five year survival only in about 20 % of patients (1). Progressive dysphagia is responsible for the poor quality of life. Different methods have been used to palliate dysphagia: dilatation therapy, insertion of endoprosthesis (plastic or self expanding), Argon plasma coagulation, NdYAG laser therapy and Photodynamic therapy (PDT). The main indications for laser therapy are: endophytic type of tumour, stopping of acute bleeding, tumorous overgrowth of implanted stent and treatment of small malignant tumours in patients unsuitable for surgery. Contraindications are infiltrating type of tumour, and the presence of fistula. High risk represents localisations in cardia region and Killian ostium and previous radiotherapy. Olympus endoscopes were used for the laser treatment. The core diameter for the laser optic was 400 nm. Patients were treated on outpatient base. Laser photocoagulation was performed (when possible) from distal to proximal part of the lesion, but in most of the patients technique was "prograde" because of the excessive tumours growth. During the initial treatment patients were treated twice or three times a week untill the dissappearance of dysphagia or complete macroscopic destruction of exophytic part of tumour.

St. Elizabeth Oncology Hospital, Bratislava, and National Cancer Hospital, Bratislava, Slovakia

Address for correspondence: P. Mlkvy, MD, PhD, St. Elizabeth Oncology Hospital, Heydukova 10, SK-812 50 Bratislava 1, Slovakia

During the follow up patients were reendoscoped every month and eventuallly retreated by laser or non-laser adjuvant therapy. Three types of non-laser treatment were combined in 51 % of patients: radiotherapy (external or intracavital), chemotherapy and implanting stents. A nutrition scale was used for an evaluation of patient's condition (from 4 to 0) and initial success was defined as the reaching of minimal improvement of two grades lasting 15 days without retreatment.

In St Elisabeth Oncology Hospital and National Cancer Hospital we have treated overall 316 non-surgical patients over a 15 years period (1987–2002) with mean age 69 years (range 39–91). Epidermoid cancer was observed in 73 % and adenocarcinoma in 27 % of patients. Distal third with 40 % and middle third with 30 % were the most frequent localisations for laser therapy, while cardia region and Killian ostium occured in 15 % each. The initial success rate was 79 % with overall improvement of the score with 2.1 (from 3.6 to 1.5) and average improvement duration was 136 days. In long term results the average duration of improvement in 162 patients (74 %) was 136 days. Gastrostomy or endoprosthesis were applied in 22 patients (10 %). Complications (all small perforations) rate was 2.3 % (6 patients) treated either by surgical gastrostomy (2) or endoscopic prosthesis (4).

Photodynamic therapy (PDT) produces localised necrosis with light after prior administration of photosensitizing drug. Released toxic oxygen produces localised necrosis of tumorous tissue on cellular level. As PDT lesions in the gastrointestinal tract do heal so well, the technique is suitable for repeated endoscopic use. Indications for PDT in esophagus are high grade (HGD) or middle grade dysplasias in Barrett esophagus and TiS and Tla cancer as well, dysplastic "field change disease" and other esophageal cancer in the stage Tis Tla. For palliation is PDT used as an adjunct to Nd YAG laser in recanalisation of inoperable cancer or destruction of tumouros overgrowth of implanted esophageal stents.In the clinical practise mostly used senzitizers are: ALA induced PP IX, photofrin, mTHPc, porfimer sodium and phtalocyanine. With numerous published studies Barrett eophagus has attracted the greatest attention for PDT. Overholt (2) using Photofrin as a senzitiser described 77 % eradication success of early cancer, 88 % eradication of high grade dysplasia (HGD) and 92 % in low grade dysplasia (LGD). The complication rate was 31 % represented with partial strictures. Savary (3) reported 31 patients treated with PDT using three senzitizers in Tl stage of esophageal cancer. Eradication rate was as high as 84 % with follow up of 2 years. Complications occured in 4 patients (two partial strictures and two small fistulas). Mean problem of PDT remains several weeks lasting cutanneous photosenzivity occuring in all senzitizers except ALA. Despite this PDT became on of the most rapidly spreading methods in the treatment of dysplasias and early cancers of esophagus and field change disease dysplasias.

Reference

1. Mlkvy P et al. Paliative Treatment of Esophageal Cancer by Laser coagulation. Neoplasma 1994; 41 (4): 233—236.

2. Overholt BF et al. Photodynamic therapy in Barrett Esophagus. Gastrointest Endoscopy 1999; 49: 1—7.

3. Savary J et al. PDT in Early Squamous Ca of the Esophagus. Endoscopy 1998; 30: 258—261.

4. Mlkvy P et al. PDT of Gastrointestinal Tumours using Three Senzitizers. Neoplasma 1997; 44 (6): 321—324.

Received January 7, 2003.
Accepted Fabruary 7, 2003.