

Original research-Orijinal araştırma

Self-expandable metallic stents for palliative treatment of esophageal cancer

Özofagus kanserinde kendiliğinden genişleyebilen metalik stentlerin palyatif tedavide kullanımı

Yaşar Tuna*, Ömer Başar

Department of Gastroenterology (Y. Tuna, MD), Akdeniz University School of Medicine, TR-07059 Antalya, Department of Gastroenterology (Assoc. Prof. Ö. Başar, MD), Dışkapı Yıldırım Beyazıt Teaching and Research Hospital, TR-06110 Ankara

Abstract

Aim. Esophageal cancer is common in Turkey. Many of the patients apply to clinics at the advanced stage and curative treatment is usually not possible. Mean survival ranges between 4 to 6 months in these patients. Self-expandable metallic stents (SEMS) are used to relieve dysphagia and increase quality of the life in inoperable esophageal cancer patients and are important in palliation. The aim of this study is to evaluate the efficacy and complications of self-expandable esophageal metallic stents as a palliative treatment option in patients with advanced esophageal tumors narrowing the esophageal lumen. **Method.** SEMS was placed to nineteen patients with dysphagia in Akdeniz University Hospital between the years of 2006 and 2010. Dysphagia was graded before and after stent placement. Complications were evaluated after the stent placement. **Results.** The stent placement procedure was technically successful in all of the patients. Dysphagia decreased after insertion of self-expandable esophageal metallic stents from grade 4 to grade 2 in 47.4% of patients and from grade 3 to grade 2 in 52.6% of patients. No life-threatening complications occurred. **Conclusion.** Undernutrition appears to be closely related with poor outcome of esophageal cancer. This study suggested that palliative stent placement in inoperable esophageal cancer was effective to relieve dysphagia.

Keywords: Esophageal cancer, stent placement, palliative treatment

Özet

Giriş. Özofagus kanseri Türkiye’de yaygın görülür. Hastaların büyük çoğunluğu ileri evrede doktora başvurmakta ve küratif tedavi mümkün olamamaktadır. Bu hastalarda ortalama yaşam süresi 4 ile 6 ay arasında değişmektedir. İnoperable özofagus kanserlerinde disfaji semptomlarında rahatlatma ve yaşam kalitesini yükseltme amacıyla kendiliğinden genişleyebilen metalik stent uygulaması önemli bir palyasyon sağlamaktadır. Bu çalışmanın amacı özofagus lümenini daraltan ileri evre tümörlerin neden olduğu disfaji semptomlarının palyasyonunda kendiliğinden genişleyebilen metalik stent uygulamasının yararları ve komplikasyonları değerlendirildi. **Yöntem.** Akdeniz Üniversitesi Tıp Fakültesi Endoskopi Ünitesinde 2006 ile 2010 arasında ondokuz disfaji nedeniyle başvuran hastaya kendiliğinden genişleyebilen stent uygulandı. Disfaji derecesi uygulama öncesi ve sonrası değerlendirildi. Stent uygulaması sonrası komplikasyonlar değerlendirildi. **Bulgular.** Tüm hastalarda stent yerleştirilmesi teknik olarak başarılı oldu. Stent sonrası disfaji hastaların %47,4’ünde grade 4’den grade 2’ye ve %52,6’sında grade 3’den grade 2’ye geriledi. İşleme bağlı hayatı tehdit edici komplikasyon görülmedi. **Sonuç.** Özofagus kanserlerinde yetersiz beslenme ile kötü sonucun yakın ilişkili olduğu görülmektedir. Bu çalışma ile inoperable özofagus kanserlerindeki disfajinin palyasyonunda kendiliğinden genişleyebilen metalik stent uygulamasının etkili olduğu gözlemlenmiştir.

Anahtar sözcükler: Özofagus kanseri, stent yerleştirilmesi, palyatif tedavi

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*Corresponding author:

Yaşar Tuna, MD, Gastroenteroloji Anabilim Dalı, Akdeniz Üniversitesi Tıp Fakültesi, TR-07059 Antalya. E-posta: yasartuna61@hotmail.com

Introduction

The prognosis of esophageal cancer remains poor, with a 5-year survival rate of 10% to 15% [1]. Dysphagia is the first and the main symptom in esophageal cancer, leading to a decrease in food intake at earliest stage of disease. More than half of the patients with esophageal cancer need palliative therapy at the time of diagnosis [2]. In a previous report, 78% of patients with esophageal cancer were undernutrition at the time of diagnosis [3]. Esophageal bypass surgery has been performed but results of surgery are not satisfactory because of postoperative complications. Self-expandable esophageal metallic stents (SEMS) are used for the palliation of malignant dysphagia and provision of an appropriate quality of life during such a short survival period [4]. SEMS offer a small delivery system, which allows relatively easy intubation with minimal discomfort and few complications. Concerning this endoscopic approach, procedure related complications, such as hemorrhage, perforation, misplacement, risk of stent migration, overgrowth, difficulties of stent removal, or repositioning and high cost are drawbacks of stents [5]. Covered stents are superior at restricting tumor ingrowth than uncovered types but migration is higher in covered SEMS [6-9]. There is no general consensus on using a particular type of stent. In this study outcome of SEMS used to treat 19 patients with severe dysphagia are given. We evaluated the effect of SEMS insertion on dysphagia of undernourished patients.

Materials and methods

A total of nineteen inoperable esophageal cancer patients who applied to the endoscopy unit of Akdeniz University Hospital in Antalya between 2006 and 2010 were evaluated retrospectively. There were 13 men and 6 women, aged 62.5 ± 14.6 years. SEMS was located to nineteen patients with complaints of dysphagia. For stenting, a covered Ultraflex Stent (Boston Scientific, Watertown, MA, USA) with different length, from 8 to 14 cm and a diameter of 18 mm were used. Stents were at least 3 cm longer than the malignant stricture. Informed written consent was obtained from all of the patients. Before stenting, an upper gastrointestinal endoscopy was performed to determine the length of stenosis and the presence of broncho-esophageal fistulas. Some of the patients with advanced obstruction underwent esophageal dilation using Savary dilators over a stiff-angled metallic guide wire. The stenosis was dilated to 12.8 or 15 mm. After dilatation, the position and length of the stenosis was defined endoscopically and the upper and lower margins of the stenosis were marked under fluoroscopic guidance with external radio-opaque markers in 11 patients. Using the radio-opaque markers as a guide, under fluoroscopic control, endoprosthesis was then deployed in most of the patients. The final position was checked endoscopically and by plain radiographs of the chest. All of the stent placements were performed using flexible endoscopy. The length of the stenosis varied from 5 to 10 cm (mean 6.4 ± 1.7 cm). Most common histological morphology of cancers were squamous cell carcinoma. Seventy three percent (14/19) of the patients with esophageal cancer had a history of RT and/or CT. The site of obstruction was located in upper third of the esophagus, in middle third of esophagus and lower third of esophagus. Some of the patients had broncho-esophageal fistulas. All cases had end stage disease with extensive primary local tumor in 5 patients, the presence of distant metastases in 9 patients, local recurrence after surgery in 2 patients and tracheoesophageal fistula in 3 patients (Table1). Dysphagia was graded on a scale of 0 to 5: grade 0, no dysphagia; grade 1, occasional dysphagia to solid foods; grade 2, persistent dysphagia to solid foods; grade 3, dysphagia to semisolid foods in 6 patients; grade 4, dysphagia to liquids; grade 5, inability to swallow clear liquids or saliva. The dysphagia was estimated during outpatient visits every 4 weeks until patient's death.

All of the patients were instructed to consume only liquids for the first 24 hours, semifluids for 2-3 days and solids according to toleration. Stent related complications included esophageal perforation, hemorrhage, and post-stenting pain detected within 24 hours of stent insertion. Tumor in-growth, stent migration, impaction of ingested foods at

proximal end of the tumor were detected after 1 month of stent insertion.

Results

A total of nineteen patients with (mean age: 62.5±14.6 years; range 35-80 years; 13 males-6 females) inoperable esophageal cancer were evaluated. Most of the patients initially presented with severe dysphagia (18/19, 94.8%). 3 patients had trachea esophageal fistula. Most of the patients (12/19, 63%) had grade 4 dysphagia in our study (Table 2). The most common histological morphology was squamous cell carcinoma (15 cases, 78.9%), followed by adenocarcinoma (3 cases, 15.8%). The most common location of obstructions was in distal esophagus (14 cases, 73.7%). In fourteen patients unresectable and/or metastatic esophageal cancer did not respond to the chemo/radiotherapy and esophageal stents were inserted. Two patients had a recurrence of the tumor after surgery. Nine patients had metastatic tumor at the time of diagnosis. Three cases had broncho-esophageal fistulas which were occluded with the deployment of SEMS (Table 1).

Table 1. Epidemiological and clinical features of patients with inoperable esophageal cancer

Feature	n (%)
Male/female	13/6
Mean age (years)	62.5
Location of stenosis	
Proximal one-third	2(10.5%)
Middle one-third	3(15.8)
Distal one-third	14(73.7)
Stent indications	
Metastatic stage tumor	9(47.5%)
Unresectable tumor	5(26.3%)
Local recurrence after surgery	2(10.5%)
Tracheoesophageal fistula	3(15.7%)
Morphology	
Squamous	15(78.9%)
Adenocarcinoma	3(15.8%)
Other	1(5.3%)
Length of stenosis (cm), mean	6.4
Length of stent (cm), mean	9.8

Self-expandable esophageal metallic stent was placed to all of the patients with complaints of dysphagia. 8 patients underwent esophageal dilation using Savary dilators over a stiff-angled metallic guide wire (8/19, 42.1%). The stenosis was dilated to 12.8 or 15 mm. The position and length of the stenosis was defined endoscopically. After dilation, all of the stents were deployed by flexible esophagoscopy. The procedure was well tolerated and the stents were correctly placed in 18 patients (18/19, 94.7%). One of the stent placements failed because of its early release from the delivery system and it migrated to stomach. This failed stent was removed by a snare catheter and redeployed again successfully. Three cases with tracheoesophageal fistula were treated after stent placement. Stent migration was seen in 3 cases (3/19, 15.7%). Migrating stent was pulled back by esophagoscopy.

Restenosis was seen in two cases of the patients who died within short period of the time. The mean length of stenosis was 6.4±1.7 cm. Average length of stents was 9.8±1.5 cm (Table 1). All of the patients were evaluated by direct radiogram after the procedure. Single stent was sufficient for all of the patients. The severity of dysphagia before stent placement was grade 2 in a patient, grade 3 in 6 patients, grade 4 in 12 patients. Dysphagia after the stent deployment was grade 1 in 12 patients and grade 2 in 7 patients. Improvement in swallowing was observed in all of the patients (Table 2).

Table 2. Grades of dysphagia before and after stent placement

Dysphagia	Before stent(n)	After stent(n)
Grade 1	-	6
Grade 2	1	12
Grade 3	6	1
Grade 4	12	-
Grade 5	-	-

There was no perforation associated with the procedure. A patient had a life-threatening massive hemorrhage that occurred at the time of dilatation before stent placement and died during the procedure. Therefore the death was not related with stent placement. Recurrent or persistent dysphagia occurred in 26.3% of the patients due to stent migration and re-stenosis. 18 of the patients had died before the beginning of this retrospective study. The median survival of patients after the stent placement was 116 days (range 15-210). The majority of the cause of death was progression of tumor (94.7%). Tumor unrelated death occurred in none of the patients.

Table 3. Complications related to self-expantable metallic stents

Complications case	n(%)
Un-placement	1(5.2)
Chest pain	13(68)
Hemorrhage	1(5.2)
Stent migration	3(15.7)
Re-stenosis	2(10.5)

Discussion

Esophageal cancer has frequently been detected in an advanced stage. Dysphagia is the first and the main symptom in esophageal cancer, leading to a decrease in food intake at earliest stage of disease. More than half of the patients with esophageal cancer need palliative therapy at the time of diagnosis [2]. The ideal palliative therapy must be safe, relatively cheap, and effective, should provide rapid and permanent relief and be easy to perform. Esophageal by-pass surgery has been performed but the results of surgery are not satisfactory because of postoperative complications. SEMS are used for the palliation of malignant dysphagia and should provide an appropriate quality of life during such a short survival period [4, 10]. It has been shown that SEMS were superior to plastic stents [11]. Relief of dysphagia was reported to be 81% with stents, 63% by chemotherapy, and 56% radiotherapy [12-15]. Stent placement was failed in one of our cases and repositioning of SEMS was needed during deployment. The survival of patients with esophageal cancer is influenced by numerous factors, such as tumor stage, therapy modality, response to therapy, mortality related to therapy, age, gender, combined cigarette and alcohol addiction, and accompanying diseases. Performance status, weight loss, and malnutrition are the other factors that influence survival. The existence of distant hematogenous metastasis is the most important prognostic factor for patients with esophageal squamous cell carcinoma and adenocarcinoma. Mean survival of these patients is 6-12 months when there is a lack of any connection with primary tumor histological subtype and location, and no available therapy modality can lengthen this time frame. In our study, the mean survival time was similar to those reported in the literature [16]. Although the relief of the symptoms after SEMS insertion in patients with extra esophageal malignancies has been reported to be lower than the patients with esophageal lesions, SEMS can be considered as a good choice of treatment in the palliation of patients with extrinsic esophageal compression [17]. In our study, SEMS were deployed successfully in 6 patients with lung cancer who had significant dysphagia and improvement in swallowing was observed. In previous studies, the relief of dysphagia after SEMS insertion in patients with esophageal cancer was reported to be

significant [17-19] and also closure of the tracheoesophageal fistula was seen in about 70-100% of patients [20, 21]. In those studies several types of stents were used for the palliation of dysphagia in patients with esophageal cancer, but no previous study compared the cost, effectiveness, and safety of the types of stents used. In our study, after SEMS insertion, the dysphagia score improved more than two grades, and in a patient with tracheoesophageal fistula, sealing was achieved successfully.

In conclusion, using SEMS in patients with inoperable esophageal cancer can provide excellent relief in malignant dysphagia and provides an appropriate quality of life during such a short survival period.

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