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Superior Socio-Medical Alternative to Feeding Gastrostomy and Jejunostomy in Advanced Esophago-Gastric Junction Adenocarcinoma

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Rezumat

Alternativă superioară socio-medicală gastrostomei și jejunostomei de alimentație în adenocarcinoamele joncțiunii eso-gastrice avansate

Introducere: Diagnosticarea adenocarcinomului de joncțiune eso-gastrică are loc adesea când procesul neoplazic este surprins în stadii avansate şi obstrucționează joncțiunea eso-gastrică determinând disfagie, stadii în care intenția terapeutică de radicalitate este mai degrabă irealizabilă. În aceste situații tratamentul are ca scop principal asigurarea capacității de alimentare pe cale cât mai naturală şi instituirea tratamentului oncologic adjuvat. Apelarea la protezare esofagiană pe cale endoscopică asigură pacientului posibilitatea alimentării per os şi o bună inserție socială, însă datorită imposibilității tehnice de traversare a stenozei tumorale, cu endoscopul, sau a reținerilor endoscopistului în cazul zonelor „delicate" (polii esofagului) există si rezerve ale acestei metode (în medie 20%).
Material şi metodă: Am efectuat un studiu retrospectiv menit să stabilească modalitatea terapeutică optimă în funcție de stadiul evolutiv al bolii, precum şi să analizeze justificarea procedeului original de endoprotezare pe cale laparogastroscopică prin foraj transtumoral ca alternativă tehnică pentru "rezervele" sau eşecurile protezărilor endoscopice şi ca soluție biologică şi socială la invalidanta gastrostomă în cazul bolnavilor cu adenocarcinom de joncțiune eso-gastrică depăşit din punct de vedere oncologic.
Rezultate şi discuții: Stadializarea a fost dezarmantă, majoritatea pacienților fiind diagnosticați în stadii avanstate, afirmație susținută de literatura de specialitate. Cât priveşte endoprotezarea esofagiană laparogastroscopică prin foraj transtumoral, rezultatele obținute sunt semnificative din punct de vedere al morbidității postoperatorii în special.
Concluzii: Deşi cazuistica noastră în ceea ce priveşte endoprotezarea laparogastroscopică prin foraj transtumoral în adenocarcinomul joncțiunii eso-gastrice este limitată, acest procedeu original ne-a dat satisfacție ori de câte ori am apelat la acest abord.

Cuvinte cheie: adenocarcinom de joncțiune eso-gastrică, foraj transtumoral, endoprotezare esofagiană laparogastroscopică, paliație miniinvazivă

Abstract

Introduction: The diagnosis of esophago-gastric junction adenocarcinoma often occurs when the neoplastic process is surprised in advanced stages and blocks the esophageal-gastric junction causing dysphagia, stages in which curative therapy is more likely impossible to be accomplished. In these cases, the treatment goal is mainly to provide feeding capacity as naturally as possible and to start the adjuvant oncological treatment. The use of endoscopic esophageal prostheses provides the patient with the possibility to be fed orally and with a good social integration, but due to the technical incapacity to cross the tumoral stenosis with the endoscope, or due to the endoscopist's concerns regarding the "sensitive" areas (poles of

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the esophagus), there are reluctances in respect to this method (on average 20%).
Material and Method: We conducted a retrospective study aimed to determine the optimal therapeutic modality depending on the evolutive stages of the disease and to analyse the justification of the original procedure of laparo-gastroscopic esophageal stenting through tumoral drilling as a technical alternative to the "reluctances" or failures of endoscopic prosthesis and as a biological and social solution to the disabling gastrostomy for patients with advanced esophageal-gastric junction adenocarcinoma.
Results and Discussions: Staging was disarming, most patients were diagnosed in advanced stages, fact also supported by literature. Regarding esophageal stenting by transtumoral drilling, the results are significant especially in terms of post-operative morbidity
Conclusions: Although our study regarding laparogastroscopic stenting by transtumoral drilling in esophago-gastric junction adenocarcinoma is limited, this original procedure brought us satisfaction whenever we used this approach.

Key words: esophago-gastric junction adenocarcinoma, trans-tumoural drilling, laparogastroscopic esophageal stenting, minimally invasive palliation

Introduction

Currently, worldwide, there has been a significant decrease in the incidence of gastric cancer, as well as a change in the location of gastric adenocarcinoma, from distal to proximal, with the incidence of the upper gastric pole adenocarcinoma increasing alarmingly (1,2,3,4). Simultaneously, the esophageal adenocarcinoma and the esophageal-gastric junction adenocarcinoma have reported increased incidences comparing to the scuamos carcinoma (2,5,6,7), suggesting that their separation into esophageal neoplasms and gastric cancers is inappropriate and improper or rather insufficient (8). Although, in time it was referred to by different names (eso-gastric cancer, eso-cardial cancer, eso-cardio-tuberositary cancer) the esophago-gastric junction adenocarcinoma has established itself as an independent entity only after the consensus conferences of the "International Gastric Cancer Association" (IGCA) and of the "International Society for Diseases of the Esophagus" (ISDE) in the years 1995 and 1997, when the definition proposed by Siewert and Stein was officially accepted, the esophago-gastric junction adenocarcinoma consisting of the tumours located within the limits of 5 cm caudally and cranially to the anatomic cardia (4,9,10,11). The diagnosis often occurs when the neoplastic process is surprised in advanced stages and blocks the esophageal-gastric junction causing dysphagia, stages in which curative therapy is more likely impossible to be accomplished (3). In these cases, the treatment goal is mainly to provide feeding capacity as naturally as possible and to start the adjuvant oncological treatment (10,11,12). The use of endoscopic esophageal prostheses provides the patient with the possibility to be fed orally and with a good social integration, but due to the technical incapacity to cross the tumoral stenosis with the endoscope, or due to the endoscopist's concerns regarding the "sensitive" areas (poles of the esophagus), there are reluctances in respect to this method (on average 20%) (12,13).

Considering the major shift in the epidemiology of esophageal-gastric junction adenocarcinoma and its controversies, both in terms of classification and therapy, this disease has become a subject of interest.

Materials and Methods

We conducted a retrospective study aimed to determine the optimal therapeutic modality depending on the evolutive stages of the disease and to analyse the justification of the original procedure of laparogastroscopic esophageal stenting through tumoral drilling as a technical alternative to the "reluctances" or failures of the endoscopic prosthesis and as a biological and social solution to the disabling gastrostomy for patients with advanced esophageal-gastric junction adenocarcinoma.

A number of 93 patients with esophageal-gastric junction adenocarcinoma, belonging to two clinical centres in the country, the IInd Surgical Clinic within the Clinical County Emergency Hospital of Sibiu and the General and Esophageal Surgery Clinic of "Sfânta Maria" Clinical Hospital Bucharest, were hospitalized and treated in both clinics in the last 5 years (2007-2011). Only the cases strictly respecting the WHO and Siewert criteria of classification were included in the study. The general disease stage was assessed according to the seventh edition of the "American Joint Committee on Cancer" (AJCC) classification system in collaboration with the "Union Internationale Contre le Cancer" (UICC) (14,15,16).

Out of the 93 patients, 19 were treated by laparogastroscopic esophageal stenting through transtumoral drilling, 75 were subjected to other forms of surgery, with the mention that one patient benefited both from laparogastroscopic esophageal stenting (for a benign distal esophageal stenosis later proven to be malignant by the histopathologic examination of the tumour fragments collected during the trans-stenotic drilling) and from radical open surgery.

Regarding the cases treated by laparogastroscopic esophageal stenting through transtumoral drilling the patients' selection was based on the following criteria: locoregional invading tumour, metastatic tumour, comorbidities, failure of the endoscopic insertion with the traditional recommendation for feeding gastrostomy.

The anatomic-topographic localization (Siewert classification) of the neoplastic process was a key factor in choosing the surgical therapeutic strategy, of the 93 patients the most common tumour type being the type III - subcardial adenocarcinoma (65.59%).

Results

Although only 93 patients, diagnosed within a period of five

years, were included in the study, this does not reflect a low incidence of the disease, the number of hospitalized patients depending largely on addressability. The increased incidence of the neoplastic disease among male patients is to be noted, 65 cases (69.89%), with an aggregation of the cases between the ages of 55 and 65, most cases (56 patients (60.21%)) coming from rural background. Clinically, 76 patients had dysphagia at diagnosis, the majority presenting dysphagia for semi solid food, while total dysphagia was correlated with a longer evolution of symptoms and with marked weight loss. Epigastric pain was an important sign commonly seen in our cases (51.61%). Sialorrhea was rarely seen in our statistics, however we noticed the presence of relatively frequent regurgitation (29.03%) and pyrosis (41.93%). Weight loss and fatigue were present in most cases, 84.94%, respectively 67.74%, as a result of malnutrition due to inadequate food intake caused by dysphagia and neoplastic intoxication.

Staging was disarming, most patients were diagnosed in advanced stages, fact also supported by literature, which reports that approximately 80% of the patients in the West have advanced disease at the moment of the diagnosis, 50% of them with distant metastases. With few exceptions (single organ metastasis), there is no potentially curative treatment, only palliative (17). (*Table 1*).

Radical resection was performed in 38 cases, which benefited from a wide range of surgical techniques: transthoracic approach (Ivor Lewis procedure-1 case, McKeown-2 cases and left thoracoabdominal approach-3 cases), transhiatal approach (Orringer process)-1 case, or total gastrectomy associated with limited resection of the distal esophagus by abdominal transhiatal approach. The remaining 55 patients received other diagnostic surgical procedures and/or palliative treatment, of which 16 were represented by feeding gastrostomy and one case of feeding jejunostomy.

In one patient, a self-expanding metallic stent was inserted, that migrated intragastrically, requiring its removal and a feeding gastrostomy. The frequent use of diagnostic laparoscopy reduced practically to zero the need for exploratory laparotomy, the latter being performed in one patient who presented besides a Siewert type I adenocarcinoma stage IV, a recurrent irreducible postincisional hernia.

Out of the patients with Siewert type I tumours, radical resections were undertaken only in 3 cases, the remaining 8 benefited from palliative procedures. Curative interventions consisted of transhiatal abdomino-cervical esophago-gastrectomy (Sloan Orringer) - 1 patient, subtotal esophagectomy with triple abdomino-cervical-thoracic approach McKeown, with ascending gastric tube formation - 2 cases. For 37 patients with adenocarcinoma Siewert type II and III, total gastrectomy with distal esophagectomy by subdiaphragmatic abdominal-transhiatal approach (Hill procedure) was performed, and to restore digestive continuity the Roux-en-Y jejunal loop (5 cases) or Ω jejunal loop with Braun fistula and Rosanov stricture (32 cases) were used. Four patients required extensive surgery to the thoracic esophagus to achieve oncological limits by separate abdominal and thoracic incisions (right (Ivor Lewis) - 1 case, left - 3 cases).

Worth mentioning is the case of a patient submitted to radical surgery for esophago-gastric junction adenocarcinoma, a Siewert type II, who also presented a complete situs inversus beside the neoplastic process.

There were 7 patients with esophageal-gastric junction adenocarcinoma, Siewert type II and III, who received total gastrectomy with distal esophagectomy through subdiaphragmatic abdominal-transhiatal approach combined with abdominal D1 lymphadenectomy. The surgery was considered a palliative maximal cytoreductive resection (R1 resection).

Although most authors advocate to perform lymphadenectomy with the preservation of the spleen, splenectomy was performed in most cases of esophago-gastric junction adenocarcinoma, Siewert type II and III in order to facilitate the lymphodissection of the splenic hilum (group 10) and of the lymph nodes situated along the splenic artery (group 11), considering that the risk of malignant lymph nodes remaining at this level exceeds the long term risk for immunodeficiency occurrence due to splenectomy.

The approach preferred in restoring the digestive continuity after esophageal-gastric resection consisted in avoiding as much as possible the placement of the anastomosis in the mediastinum, due to the vital risk, and to the difficulty to treat the intrathoracic anastomotic fistula if it occurs. For the cases where the anastomosis was performed at mediastinal level, we have not registered anastomotic fistula.

Regarding esophageal stenting by transtumoral drilling, the results are significant especially in terms of postoperative morbidity, out of the 19 patients, the endoprosthetic procedure was performed laparogastroscopically in 17 of them. Two patients required open surgery, to facilitate the use of digitoclasia because of the extremely tough infiltrative tumour which determined an esopahago-gastric channel hook-shaped deformity impossible to catheterize. In these cases, we used a hard plastic prosthesis for hemostasis in the drilled area by strong compression at this level. There were no fistulas or bleeding, but we did register complications in 2 cases facilitated either by the unforeseen endoscopic exploration, or by the adjuvant cancer therapy. The prosthesis was extracted and placed back laparogastroscopically in both patients. Post-prosthesis dysphagia was almost absent, 4 cases presented transient immediate postoperative dysphagia, in 2 cases it was

Table 1. *Case distribution according to TMN staging*

Stage	No. of patients
0	-
IA	2
IB	3
IIA	5
IIB	3
IIIA	15
IIIB	6
IIIC	25
IV	34

due to prosthesis obstruction by partially masticated food, impediment resolved by exploration and endoscopic lavage, and in the other two cases, dysphagia improved after a few days of chewing education for a better food trituration.

Monitoring the patients after discharge was possible in very few cases. In those who came to the scheduled examinations, we have registered an improvement in the survival rate of 5 months to 4 years, the most common cause of death in monitored patients being irreversible decompensation of liver and renal function due to the advanced neoplastic process, data obtained by us "unconventionally" in the context of the absence of necropsy.

Discussions

Most patients with esophageal-gastric junction adenocarcinoma are diagnosed in advanced stages, the disease being incurable. The tumour resection is preferred and mandatory in esophago-gastric junction neoplasms in the apparently operable stages, but it becomes useless and dangerous in advanced stages. In choosing the best surgical method, one should consider on the one hand the safety of the surgical procedure (low morbidity and mortality) in relation to the biological status of the patient, and on the other hand, the oncological criteria (R0 resection with complete removal of the possibly affected lymph nodes, low rate of relapse/excellent long-term survival), the possibility of resection being assessed by a careful preoperative staging, taking into account the immunological decline and the anesthesic-surgical risk, avoiding major surgical procedures which are in detriment to the patient's survival, as well as supra-radical interventions.

Palliative treatment is designed for lesions that will not benefit from radical resection or cytoreductive intent, its main purpose consisting of improving the patients' quality of life and often increasing the life expectancy. Dysphagia is the cardinal symptom in tumoral obstructions of the esophageal-gastric junction, its presence aggravating the patients' preexisting depression due to the presence of a relentless disease. Moreover, malnutrition caused by feeding impossibility accelerates physical and mental deterioration. Endoscopic esophageal stenting is currently the preferred method in the palliation of dysphagia if it is in an accessible area endoscopically speaking. Unfortunately, this procedure fails in approximately 20-30% of cases due to either technical difficulties related to the endoscopic approach: visualization, placement, catheterization inability (major strictures, filiform lumen), visual positioning-repositioning inability or in propulsion (insertion by propulsion with elastic pusher), or to the endoscopist's reluctances, in case of esophagus extremities (12,13). Currently, endoscopists prefer flexible prostheses (easy to be inserted), metallic, silicone, covered or not, double or not, with antireflux system or not, all of them having one thing in common: high price (500-1500, 2000 Euros), considering that the patient has to support the full cost.

Laparogastroscopic approach represents a solution to the endoscopists' concerns and failures for inoperable patients and is a simple, fast and efficient method that provides organoleptic comfort in swallowing and deglutition in contradiction to the invalidating feeding gastrostomy.

The direct visualization of the peritoneal cavity during laparoscopic exploration provides a major addition in staging the neoplastic disease (detecting visceral or peritoneal metastasis that escape the preoperative investigations).

Esophageal catheterization is essential. The insertion of the oro-gastric probe may fail due to tumoral stenosis, which we encountered in 11 of 19 patients selected for laparogastroscopic esophageal stenting. In this case, we tried tumoral esophagus catheterization in aboral manner, with the help of a polythene catheter with malleable metal stylet with visual control, the localisation of the cardial orifice being facilitated by the insertion of a thin guide wire when performing the upper gastrointestinal endoscopy (rendez-vous technique). In two cases, the esophagus catheterization was not possible, due to the incapacity to laparoscopically access the tumoral infiltrated cardia, both cases requiring classical open minimally invasive approach (minilaparotomy). Digital localisation of the cardia orifice was performed followed by a veritable tumoral drilling by digitoclasia.

An aspect worth mentioning is that this method of stenting facilitates the histopathologic diagnosis, during the tractioning and crossing of the area of malign stenosis by tumoral drilling, tumoral fragments may be sampled, which in uncertain cases (preoperative endoscopy with benign biopsy) by extemporaneous examination can confirm or definitively establish per primam the diagnosis of malignant stenosis.

The laparogastroscopic approach is able to insert any kind of prosthesis from the semi-rigid to the flexo-metallic ones and at the same time to check its topographic placement and the possibility of adjusting its position by sliding. We prefer our own preformed prosthesis given their significant self-fixation capacity, the compressive hemostatic application in case of bleeding after the transtumoral drilling, besides the fact they are the only stents that actually drill into the tumour. The flexible ones, which cross the tumoral stenosis are at the risk of being excessively compressed by very hard tumours. At the same time, our prostheses have the advantage of being low cost (10-20 Euros). Reflux is a theoretical problem not to be neglected, for which solutions have already been found (anti-reflux valve prostheses).

Conclusions

The relatively low rate of "encounter" of esophageal-gastric junction adenocarcinoma, the lack of esophageal endoscopic screening, which is unfortunately characteristic to the Romanian medical system, lead to the fact that the early or late diagnosis of esophageal-gastric junction cancer is achievable only "accidentally", in most cases in advanced neoplastic stages at the moment of diagnosis, fewer patients benefiting from curative treatment. In our study, as well as in literature, the results are not encouraging.

Although our study regarding laparogastroscopic stenting by transtumoral drilling in the esophago-gastric junction

adenocarcinoma is limited, this original procedure brought us satisfaction whenever we used this approach.

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