METHODS OF TREATMENT AND OUTCOMES IN ESOPHAGEAL CANCER SURGERY IN A LOW VOLUME CENTRE

CRISTIAN BUŞTEA[1], ADRIAN MAGHIAR[2]

[1,2]University of Oradea, [1]Emergency Clinical County Hospital Oradea, [2]Pelican Hospital

Keywords: *esophageal cancer, quality of life, mortality*

Abstract: *The incidence of esophageal cancer continues growing, being a global health problem. Nonspecific symptoms occurring late in the disease course result in advanced stages of disease diagnosis. The purpose of this paper is to present the surgical methods of treatment adapted to a general surgery centre with low volume of surgery of the esophagus and the obtained results. For achieving this aim, we constituted a working group composed of patients diagnosed with esophageal cancer who have been treated surgically with radical or palliative intent. Survival, mortality and quality of life were followed. Results on mortality are similar to medium-volume esophageal surgery centres explained by adopting an individualized surgical management, the principles of the surgical technique and the use of the same surgical team. Normal diet resume without dysphagia is the most important parameter of quality of life after surgery.*

Cuvinte cheie: *cancer esofagian, calitatea vieții, mortalitate*

Rezumat: *Incidența cancerului de esofag este în continuă creștere, fiind o problemă mondială de sănătate. Simptomatologia nespecifică, apărută tardiv în evoluție are ca rezultat punerea diagnosticului în stadii avansate de boală. Scopul acestei lucrări este de a prezenta metodele chirurgicale de tratament adaptate la un centru de chirurgie generală cu volum redus de chirurgie a esofagului și rezultatele obținute. Pentru aceasta a fost constituit un grup de lucru format din pacienți diagnosticați cu cancer esofagian cărora li s-a aplicat un tratament chirurgical cu intenție de radicalitate sau paliativ. Au fost urmărite supraviețuirea, mortalitatea și calitatea vieții. Rezultatele obținute în privința mortalității sunt similare unor centre cu volum mediu de chirurgie esofagiană explicate prin adoptarea unei conduite chirurgicale individualizate, respectarea principiilor de tehnică operatorie, cât și utilizarea aceleași echipe operatorii. Reluarea alimentației normale și absența disfagiei sunt cei mai importanți indicatori de calitate ai vieții postoperator.*

INTRODUCTION

The incidence of esophageal cancer is increasing, the overall incidence of 363 per 100,000 inhabitants, representing 3.9% of all cancers, with an overall ratio male:female of 7:1, representing the 7th leading cause of cancer in men, 6.51% of all cancers of the male sex.(1) Squamous cell carcinoma and adenocarcinoma are the predominant histological forms. If until recently squamous cell cancer was predominant, esophageal cancer incidence increase in recent years was attributed to the rise in the incidence of adenocarcinomas, so that in some areas, the incidence of adenocarcinoma has become equal to squamous cancer.(2) Thus, while in the Western European countries the incidence of adenocarcinoma continues to increase, in Japan, squamous cell cancer remains predominant, accounting for 90% of esophageal cancers, with a male / female ratio of 6/1.(3)

Treatment aims to cure the disease (radical treatment), but if the presentation is delayed, the treatment can only be palliative with symptoms relief. Radical treatment can be performed by several methods: surgical treatment (by classical or minimally invasive approach), nonsurgical treatment (radiotherapy, chemoradiation, endoscopic mucosal resection, photodynamic therapy) and multimodal treatment (complex radiochimioterapeutic radical treatment and surgical resection adapted to the stage of the disease). Palliative treatment is to improve or for temporary remission of symptoms caused by an esophageal tumour or its complications, where it cannot be applied a radical cure. Symptoms of esophageal cancer are complex and multiple aspects must be taken into account, but quality of life is particularly important when the treatment is purely palliative.(4) One good palliative method for all situations does not exist.(5) Palliative treatment methods are surgery (resection, bypass sites, stoma), radiation therapy (external, intracavitary) chemotherapy, endoscopic methods (stents, ablation - thermal, chemical, laser, photodynamic), or supportive treatment.

PURPOSE

The purpose of this paper is to present the methods of surgical treatment tailored to a centre of general surgery with low volume of surgery of the esophagus and to compare the results obtained with the literature data.

METHODS

To achieve the objectives we have set up a working group of 104 patients diagnosed with esophageal cancer in the period May 1998 - October 2012. From this group we selected patients (53 cases) who have performed major surgery (resection or bypass), the remaining patients undergoing surgical or other interventional methods of palliation. Demographic data as well as the clinical features of the patients in this study are shown in table no. 1.

[1]Corresponding author: Cristian Buşţea, Str. Ioan Alexandre, Nr. 13, Sîntmartin, România, E-mail: cristianabustea@yahoo.com, Tel: +40742 075715
Article received on 05.09.2013 and accepted for publication on 11.11.2013
ACTA MEDICA TRANSILVANICA March 2014;2(1):185-187

Table no. 1. Demographic data of the study group

Total no., n=104	No. of patients	Percentage
males	87	83.6%
females	17	16.4%
mean age	56,2 years old	
urban patients	40	38.5%
rural patients	64	61.5%
obese patients	61	58.7%
smokers	84	80.7 %
alcoholic patients	54	51.9%
gastroesophageal reflux	25	24%
Helicobacter Pylori	19	18,3%
Barrett´s esophagus	22	21,2%

The study group consisted of 104 patients and besides demographics we followed the incidence of several risk factors (Barrett's esophagus, gastroesophageal reflux, obesity, smoking, alcohol intake, presence of Helicobacter pylori). In the study group we have noticed the prevalence of patients aged between 50-69 years old with an almost equal distribution between the ranges 50-59 years old and 60-69 years old. In the literature data, the decade 60-70 years old has the highest incidence of cancer of the esophagus. The more the age is advanced the more the disease is present. In patients over 65 years old, it is 20 times more common than in those younger than 65 years old.(2) The incidence of obese patients over 50% corresponds to literature data that incriminates the increasing prevalence of obesity as one of the possible causes of the increased incidence of esophageal adenocarcinoma in the Western countries. Esophageal reflux present in a quarter of patients in the study group is a known risk factor for the development of adenocarcinoma in patients with Barrett's esophagus role in the development of esophageal squamous cell carcinoma in patients with atrophic gastritis seems to be related to non-acid reflux.(6) Barrett's esophagus is a condition that increases 30-40 times the incidence of adenocarcinoma compared to the general population, the risk persists even after applying ablative techniques (endoscopic mucosal resection or photodynamic therapy).(7) Among histopathological types of oesophageal treated tumours 59,6% were squamous cell carcinoma and 37.5% were adenocarcinomas. Distribution according to the stage of esophageal tumours shows high percentage of advanced cases. Thus, stage I and IIa 0 (0%) cases, IIb 15 (14.4%) cases, Stage III 45 (43.3%) cases, stage IV 44 (42.3%) cases. The distribution of surgical treatment in the sub-study group (consisting in 53 patients) was: esophageal resections with reconstruction by classical approach - 41 cases (77.3%), esophageal resection using minimally invasive techniques - 2 cases (3.8%), bypass - 10 (18.9 %) cases of which one case with gastric bypass graft (1.9%), 3 (5.7%) cases with ileocolic bypass graft, 5 (9.4%) cases with left and transverse colon bypass graft and 1(1.9%) case with left colon and sigma bypass graft.

For the open esophagectomy and reconstruction, we used the following approaches, in all cases using gastric graft: Ivor – Lewis method (laparotomy and right thoracotomy) in 28 cases (68.3% of total classical resections), McKeown method (laparotomy, right thoracotomy and cervical anastomosis) in 5 cases (12.2% of total classical resections), thoracoabdominal esofagoplasty (continuous abdominal and left thoracic incision) in 8 cases (19.5% of total classical resections)

In order to assess the quality of life, we took in consideration the oral diet resume for solid food and the presence of dysphagia. The patients completed a questionnaire comprising questions inspired by standard questionnaires EORTC QLQ-OES18 and EORTC QLQ-C30.(8) For survival rates and graphs we used Kaplan-Meier method.

RESULTS

Mortality. The patients in the study had the following percentages of mortality: operative mortality - 0 cases, overall postoperative mortality - 7 cases (13.2%), postoperative coincident mortality - 6 cases (11.3%). The causes and the number of postoperative deaths in personal casuistry were: myocardial infarction - 4 cases produced at 2-3 and 24 days postoperatively, bronchopneumonia - 2 cases during the hospital stay (at 5 and 16 days postoperatively), cervical fistula 1 case at 24 days postoperatively (evolving with bronchopneumonia as well).

In personal casuistry, among the possible intraoperative incidents and accidents (described in the literature) during esophagectomy and digestive continuity restoration were: presence of aberrant left hepatic artery with coronary gastric origin - 2 cases, insufficient vascularisation of colic graft - 1 case, short graft - 1 case, contralateral mediastinal pleura opening - 4 cases, torsion of the graft - 1 case. In the personal casuistry postoperative complications in esophageal cancer were represented by: respiratory complications - bronchopneumonia 2 (3,8%) cases, cardiovascular - heart attack 1 (1,9%), psychiatric – alcohol withdrawal syndrome 6 (11,3%)cases, complications of postoperative wound 3 (5,7%) cases, complications specific to digestive resection and continuity restoration - 2 anastomotic fistula (3,8%) cases, reflux esophagitis 6 (11,3%) cases, lymphorrhagia 6 (11,3%) cases.

The average length of survival of patients with esophageal resection was 14.98 ± 2.03 months and of patients receiving esophageal bypass was 9.5 ± 0.8 months.

Figure no. 1. Kaplan – Maier survival length for the patients with esophageal resection

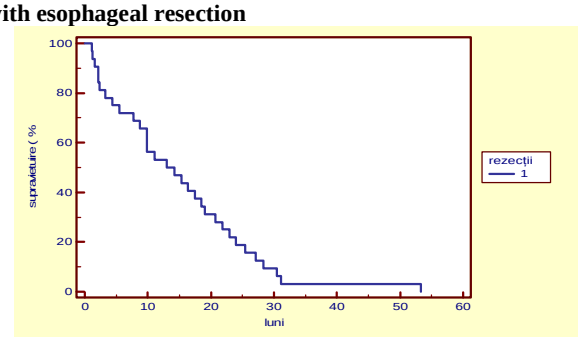
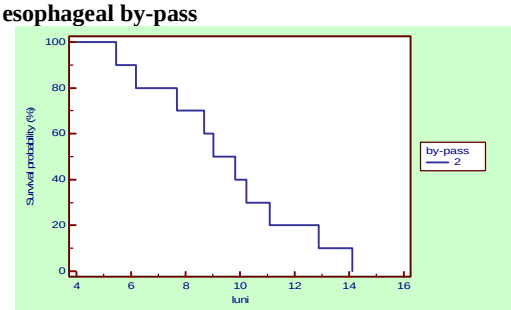


Figure no. 2. Kaplan – Maier survival length for the patients with esophageal by-pass



In correlation with survival for resection we assessed: complete remission and relapse. Complete remission (defined as complete disappearance of lesions determined by two observations at an interval of 4 weeks) was found in 39 (90.7%) of 43 cases after esophageal resection. Complete remission was

considered postoperatively by an R0 resection surgery (and intraoperatively by performing abdominothoracic lymphadenectomy and exclusion of metastases, free resection margins on histopathology). Supratumoral resection margin was positive at histopathological exam in one case where esophageal resection was performed at one year after a retrosternal bypass and the supratumoral esophageal end has developed an abscessed mucocele. Also, in the case where abdominothoracic lymphadenectomy (22 cases) was performed, the proportion of cases with positive lymph nodes was 100%. First postoperative imagistic investigations (endoscopy and/or barium abdominal ultrasound) were performed three months postoperatively.

Relapse, defined as local recurrence of disease after therapy, locoregional or distant, in my personal casuistry were encountered in 7 (16,3%) cases, in the form of regional recurrence, and distant positive lymph nodes. Local recurrence I have not met in my personal casuistry: 0 (0%) cases. Regional and distant relapse occurred as postoperative lymph node metastases in 5 cases and visceral metastases (liver) in 2 cases.

18 days after surgery, all patients resumed eating solid food. Early postoperative dysphagia in the first 3 months was not noticed. Late postoperative dysphagia after 3-6 months was encountered in 6 cases 11.3%. In none of the 6 cases no anastomotic stenosis was revealed by barium and/or endoscopy. At 3-6 months visits in 3 of these cases were visualized endoscopically into the esophageal lumen the anastomosic stitches. Some of these wires were endoscopically extracted, and other no longer appeared at the visit of 12 months, probably eliminated spontaneously into the lumen. Dysphagia was reported as a painful embarrassment after swallowing, but it din not prevent oral feeding with solid food.

DISCUSSIONS

The modality of approach was chosen according to tumour location and the preference for a certain technique. For tumours located in the middle third of the esophagus and lower third in most cases I chose Ivor – Lewis esophagectomy. The major advantage of this approach is the optimal exposure of the esophagus allowing a radical esophageal resection and extended lymphadenectomy. The second type of approach used in esophageal resections in my own casuistry was left abdominothoracic esophagectomy. In all cases, tumours were located at the esophagogastric junction. The advantage of this approach is that the lower esophagus and the esophagogastric junction are optimally exposed. The major disadvantages of this technique are the extension of the incision, including partial transection of the diaphragm, rib resection consecutive pain, functionality inadequate in many cases due to gastroesophageal reflux. For none of the cases of esophageal resections I used transhiatal esophagectomy. I came to this conduct as a result of the high incidence of lymph node invasion in patients operated when I thought oncological radicality principles require extended esophagectomy. Advantages of transhiatal approach in reduction of mortality by avoiding thoracotomy and good long-term functionality described in the literature (9) cannot offset the possibility of extended lymphadenectomy through thoracotomy.

The average number of interventions for esophageal cancer practiced per year (less than 10 cases / year) in my own casuistry may fall within the small volume operations centres (from 5 to 10 operations per year), while the results on mortality are the same with centres of medium volume level.(10) This can be correlated with the adoption of individualized surgical management, the principles of the surgical technique and the use of the same surgical team.

Comparing survival curves for resection and bypass cases we observed a better survival for resection versus bypass cases, although most cases have been in advanced stages. This is an argument in favour of practicing palliative resection in esophageal cancer.

CONCLUSIONS

In conclusion, treatment of esophageal cancer can be safely performed in general surgery centres with low volume of esophageal surgery if treatment guidelines are followed and principles of the surgical technique applied. In order to improve the quality of life, it is recommended to restore digestive continuity in all cases where possible as it provides the highest level of patient comfort.

REFERENCES

1. Chai J, Jamal MM. Esophageal malignancy: A growing concern. World Journal of Gastroenterology 2012 Dec:18 (45), 6521-6.
2. Shepherd NA. Barrett's esophagus: its pathology and neoplastic complications. Esophagus 2003;1:17-29.
3. Shigeoka H, Shioazaki H. Surgery for resecable esophageal cancer in Japan. Ann Thoracic Cardiovasc Surg 2004:10(2), 69-70.
4. Bergquist H, Wenger U, Johnsson E, Nyman J, Ejnell H, Hammerlid, Lundell L, Ruth M: Stent insertion or endoluminal brachytherapy as palliation of patients with advanced cancer of the esophagus and gastric junction. Results of a randomized, controlled clinical trial. Dis Esophagus 2005;18(3):131-139.
5. Frenken M. Best palliation in esophageal cancer: surgery, stenting, radiation, or what? Dis Esophagus 2001;14(2)120-3.
6. Kaname Uno, Katsunori Iijima, Waku Hatta, Tomoyuki Koike, Yasuhiko Abe, Naoki Asano, Gen Kusaka, Tooru Shimosegawa. Direct Measurement of Gastroesophageal Reflux Episodes in Patients with Squamous Cell Carcinoma by 24-h pH-Impedance Monitoring. Am J Gastroenterol Sep 2011;106:1923-1929.
7. De Palma GD. Management strategies of Barrett's esophagus. World Journal of Gastroenterology 2012 Nov:18 (43):6216-25.
8. Schwarz R, Hinz A. Reference data for the quality of life questionnaire EORTC QLQ-C30 in the general German population. Eur J Cancer 37:1345-51; 2001.
9. JBF, van Sandick JW, Boer AGEM et al: Extended transthoracic resection compared with limited transhiatal resection for adenocarcinoma of the esophagus. N Engl J Med 2002;347:1662-9.
10. Metzger E, Bollschweiller E, Vallbohmer D, Maish M, DeMeester TR, Holscher AH: High volume centers for esophagectomy: what is the number needed to achieve low postoperative mortality? Dis Esophagus 2004;17(4):310-314.