

Major hepatectomy for isolated metastases from gastric adenocarcinoma

Eduardo Linhares¹, Mauro Monteiro², Rubens Kesley³, Carlos Eduardo Santos³, Odilon S. Filho³ and Jose H. Simões³

¹Gastric Cancer Division, ²Hepato-biliary Cancer Division, and ³Abdominal and Pelvic Surgery Department, Brazilian National Cancer Institute, Rio de Janeiro, Brazil

Background

Liver metastases from gastric adenocarcinoma denote a poor prognosis. Most gastric metastases will be diffuse, and for these chemotherapy remains the only useful treatment modality. The treatment of isolated liver metastases is still unclear. The Japanese literature has reported good results with surgical resection, but Western series were unable to achieve the same results. We report our results with resection of liver metastases from gastric cancer in nine patients

Methods

A retrospective analysis was undertaken to determine the results of the surgical treatment of hepatic metastases from gastric carcinoma over the last five decades. Only nine patients underwent such treatment. Variables analysed were age, gender, the primary tumour, the type of liver operation performed, the time of occurrence of liver metastasis, the morbidity and mortality and the overall survival. Follow-up was complete.

Results

There were eight patients with gastric carcinoma staged as T3 and one as T4 (UICC-97). All patients had positive lymph nodes. The hepatic procedure performed was a hemihepatectomy in eight patients and a left lateral segmentectomy in one patient. Right hepatectomy was performed in six cases.

There were four patients with synchronous liver metastasis: three involved the right liver and the other involved segments II/III. All were treated by one-step surgery. The five metachronous metastases involved the right liver in three patients (accounting for half of the right hepatectomies), while the other two underwent left hepatectomies. There was a high postoperative mortality rate (33%, 3/9), two of the deaths occurring in the first decade of the study (1956, 1966) secondary to hepatic insufficiency and one from sepsis. One patient died suddenly without recurrence after 3 months. The other five died with evidence of disease at between 2 and 11 months.

Discussion

Despite some anecdotal reports of treatment with chemotherapy, either systemic or intrahepatic, the more consistent results for the treatment of patients with hepatic metastases from gastric adenocarcinoma come from the Japanese literature with the use of radical surgery. Unfortunately, Western series, including our own, do not achieve the same results. At the present time, in view of these results, we are performing less aggressive treatment such as radiofrequency ablation.

Keywords

liver metastasis, hepatic resection, gastric cancer

Introduction

Gastric adenocarcinoma is relatively infrequent in the USA and Europe but is extremely prevalent in Brazil. Despite a 9% decrease in the mortality rate during the last two decades, the Brazilian National Cancer Annual Report 2002 [1] showed that this tumour was the second commonest cause of death from cancer. The expected relative incidence for 2002 was the second in males and the fourth in women. In our department, we have been

treating about 200 new cases each year, with some 150 operations. However, patients with isolated liver metastasis are unusual, accounting for <0.5% of cases over the last 5 years.

Liver metastasis from gastric adenocarcinoma conveys a very poor prognosis. Most of these metastases will be diffuse, and chemotherapy is then the optimal treatment modality. The treatment of isolated liver metastasis from gastric adenocarcinoma remains controversial, and the relevant literature is scant. Japanese authors have

Correspondence to: Eduardo Linhares, Av. Visconde de Albuquerque 1102/201, Leblon, Rio de Janeiro, RJ 22450000, Brazil

reported good results with surgical resection, but Western series have been unable to achieve the same results. Since our routine had been to try to resect whenever feasible, we retrospectively reviewed our experience with major liver resection for isolated metastatic gastric adenocarcinoma.

Patients and methods

In view of the policy to try to resect hepatic metastasis from gastric cancer restricted to one lobe whenever possible, the charts of all patients operated for this condition from 1956 to 1999 were reviewed retrospectively. During this long period only nine patients met these criteria. The analyses included gender, age, information concerning the primary gastric tumour, the type of gastric and liver surgery performed, the time of occurrence of the metastasis, the associated morbidity and mortality and the overall survival. The follow-up is complete for all nine patients. The histological type of the tumour was determined according to WHO [2] standards, and the staging system used was UICC/97 [3].

Results

The age of the patients ranged from 22 to 86 years with a median of 44 years, and six were women. All patients had advanced gastric cancer. The gastric procedure performed was total gastrectomy in three patients and subtotal in six. There were eight cases staged as T3 and one as T4. All patients had positive lymph nodes. The hepatic procedure performed was a hemihepatectomy in eight patients and one patient underwent a left lateral segmentectomy. Right hepatectomy was performed in six cases. There were four patients with synchronous liver metastasis. Three of these involved the right liver, and all were treated by one-step surgery. The five patients with metachronous metastases had involvement of the right lobe of the liver in three cases, accounting for half of the right hepatectomies. There was a high overall post-operative mortality rate with three deaths (33%). Two of these deaths occurred in the first decade of the study (1956, 1966) secondary to hepatic insufficiency. Both patients had undergone one-step surgery with subtotal gastrectomy plus right hepatectomy. The other post-operative death was secondary to sepsis after a right hepatectomy for a metachronous metastasis. One patient

died suddenly without recurrence after 3 months. The other five patients died with evidence of disease after 2 months; 7 months; 8 months, 8 months and 11 months, respectively. Table 1 summarises the results.

Discussion

Gastric adenocarcinoma can involve the liver in two ways: by direct invasion or by metastasis. Direct liver invasion of the liver is usually restricted to segments II or III, and the treatment varies from atypical resection to left lateral segmentectomy. Such tumours are described as T4 and are staged as IIIA if no lymph nodes are positive (UICC/97) [3]. Besides undergoing hepatic resection, these patients have a very different prognosis when compared with those with stage IV disease secondary to liver metastasis. In comparison with patients with colorectal metastasis, for whom survival after resection is around 30–50% [4, 5], hepatic metastasis from gastric adenocarcinoma is associated with a very poor prognosis.

Despite some anecdotal reports of treatment with chemotherapy with a median survival of 3–11 months [6–8], the most consistent results originate from the Japanese literature with the use of radical surgery. One of the largest published series came from the Japanese National Cancer Center [9]; of a total of 6540 patients treated for gastric cancer, only 21 (0.32%) underwent hepatectomy for curative intent. Lobectomies were infrequent (4/21). The prognostic factors related to survival were serosal involvement by the tumour and evidence of lymphatic or venous vascular invasion. The median survival was 18.3 months. Saito and colleagues [10] also reported a median survival of 21.5 months for patients with synchronous metastases and suggested no influence of the depth of the tumour or the presence of lymph node

Table 1. Summary of results (n = 9)

	Results	Number of cases
Age	22–86 (median = 44)	9
Tumour (T)	T3	8
	T4	1
Lymph nodes (N)	Positive (N+)	9
Operation	Hemihepatectomy	8
	– right	6
	– left lateral	2
	Segmentectomy	1
Deaths	Before 1967	2
	After 1967	1
Median survival	8 months	6

metastases. A multicentric Japanese study [11] has reported four (19%) long-term survivors (>41 months) but a median survival of only 10 months for those who failed, the authors stressed the importance of free margins in the hepatic tissue and metastatic lymph nodes in the gastric specimen. The most recent report found in the English language literature and the second largest series published also comes from Japan [12]. It includes 19 patients with synchronous and metachronous hepatic metastasis from gastric adenocarcinoma who underwent resection plus chemotherapy. The resectability rate was 17% for synchronous lesions and 50% for metachronous lesions. The actuarial 1-year, 3-year and 5-year survival rates after hepatectomy were 77%, 34% and 34%. Solitary and metachronous metastases were significant determinants of favourable prognosis, but chemotherapy had no impact. A favourable prognostic indicator not yet mentioned was the presence of a pseudocapsule in the metastases. Despite the good actuarial survival curve, 14 patients (74%) relapsed between 7 and 26 months.

Unfortunately, the Western series have not achieved similar results, thus leaving room for much debate on the ideal management of these patients. Foster [13] published a review of the American literature on hepatic resection for metastasis in 1978. Of a total of 345 cases, only 7 were from gastric adenocarcinoma. The median survival was just 5 months, with a range of 2–17 months. The conclusion was that resection in such cases was unjustified. In 1982, Morrow and colleagues [14] reported another series of 64 patients treated for hepatic metastases, 11 of which were secondary to gastric adenocarcinoma. He suggested an aggressive approach but did not specify the survival of these patients. Bines and co-workers [15] described a series of 10 adenocarcinomas metastatic to the liver that were resected. The hospital mortality rate was 25%. There were two long-term survivors with en bloc gastric and hepatic resection, but none with non-contiguous involvement.

Although our series is small, the results suggest that hepatectomy is not justified in advanced gastric cancer for isolated metastasis because of the short length of survival. We are now using less aggressive modalities for patients with liver metastasis including ablation associated with chemotherapy or chemotherapy alone.

Acknowledgment

We thank Dr Alan Lefor (Cedars Sinai, Los Angeles, CA, USA) for his kindness in revising this article.

References

- 1 Ministério da Saúde, Brasil. *Instituto Nacional de Câncer-INCA, Estimativas da incidência e mortalidade por cancer*. Rio de Janeiro: INCA, 2002.
- 2 Jass JR, Sobin LH. *Histological Typing of Intestinal Tumours*. Berlin: Springer-Verlag, 1989.
- 3 UICC (International Union Against Cancer). *TNM Classification of Malignant Tumours*, 5th edn. Berlin: Springer-Verlag, 1997.
- 4 Scheele J, Stang R, Altendorf-Hoffmann A, et al. Resection of colorectal metastases. *World J Surg* 1995;**19**:59–71.
- 5 Yamamoto J, Shimada K, Kosuge T, et al. Factors influencing survival of patients undergoing hepatectomy for colorectal metastases. *Br J Surg* 1999;**86**:332–7.
- 6 Okuyama K, Isono K, Juan I, et al. Evaluation of treatment for gastric cancer with liver metastasis. *Cancer* 1985;**14**: 2498–2505.
- 7 Yonehara Y, Matui N, Sakuma H. Effect of intra-hepato-arterial infusion of MMC and CDDP in gastric cancer patients with liver metastases. *Surg Today* 1992;**22**:253–9.
- 8 Yamada T, Watanabe A, Sadou S, et al. A case of advanced gastric cancer with hepatic metastases successfully treated by combined chemotherapy with UFT and lentinan. *Gan To Kagaku Ryoho* 2000;**27**:281–4.
- 9 Sasako TO, Mizuno S, Kinoshita T, et al. Hepatic resection for metastatic tumours from gastric cancer: analysis of prognostic factors. *Br J Surg* 1994;**81**:1175–8.
- 10 Saito A, Korenaga D, Sakaguchi Y, Ohno S, Ichiyonishi Y, Sugimachi K. Surgical treatment for gastric carcinomas with concomitant hepatic metastasis. *Hepatogastroenterology* 1996;**43**:560–4.
- 11 Miyazaki M, Itoh H, Nagakawa K, et al. Hepatic resection of liver metastasis from gastric carcinoma. *Am J Gastroenterol* 1997;**92**:324–32.
- 12 Okano K, Maeba T, Ishimura K, et al. Hepatic resection for metastatic tumours from gastric cancer. *Ann Surg* 2002;**235**:86–91.
- 13 Foster JH. Survival after liver resection for secondary tumors. *Am J Surg* 1978;**135**:389–94.
- 14 Morrow CE, Grage TB, Sutherland DER, Najarian JS. Hepatic resection for secondary neoplasms. *Surgery* 1982;**92**:610–14.
- 15 Bines SD, England G, Deziel DJ, et al. Synchronous, metachronous and multiple hepatic resections of the liver tumors originating from primary gastric tumors. *Surgery* 1993;**114**:799–805.