Prognostic Factors Affecting Survival and Recurrence in Gastric Carcinoma

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Abstract

Background: Gastric adenocarcinoma is a serious and frequent digestive cancer. It is the second leading cause of cancer deaths in the world after colorectal cancer. The bad prognosis is caused by several factors. The identification of prognostic factors will make it possible to better codify therapeutic management in order to improve survival and reduce recurrence rates.

Aim: Identify the main prognostic factors affecting overall survival and recurrence in gastric adenocarcinoma.

Methods: Retrospective study involving patients undergoing surgery for gastric adenocarcinoma between January 2006 and March 2016 in Habib Bougatfa Hospital in Tunisia.

Results: Overall survival was 58% at 3 years. Survival without recurrence was 20 months. Survival without recurrence at 1 year, 3 years and 5 years were respectively 88%, 73% and 70%. Eleven patients had a recurrence. The median time to onset of recurrence was 12 months. Of the 11 patients who had a recurrence, nine had died. Mortality due to recurrence was 82%. In univariate analysis, overall survival and recurrence were influenced by several factors. After multivariate analysis, lymph node invasion, occurrence of recurrence, number of lymph nodes removed less than 15, presence of signet-ring cell carcinoma and tumor stage 3 and 4 significantly influenced survival. Independent factors influenced recurrences were: the presence of lymph nodes and signet ring cell carcinoma.

Conclusion: Several factors influence overall survival and recurrence in gastric adenocarcinoma. The lymph node invasion and the anatomo-pathological factors are the most important. Improving therapeutic outcomes requires early diagnosis and careful surgery.

Keywords: Gastric Cancer; Prognosis; LBVI

Introduction

Gastric carcinoma is a serious cancer and a public health problem around the world. Despite the decrease in the global incidence of this cancer [1], it remains the fifth most common type of cancer [2]. It has a poor prognosis and it is the second leading cause of digestive cancer death in the world after colorectal cancer [1]. Survival at 5 years does not exceed 20% for all stages combined. The curative treatment of gastric adenocarcinoma is based on surgical excision with lymph node dissection. In addition, the contribution of chemotherapy and radiotherapy is considerable in improving the prognosis. The prognosis of gastric cancer depends on several factors. The identification of these factors makes it possible to classify patients according to the prognostic risk, and to better codify the management and the therapeutic protocols. This will lead to improve survival and reduce recurrence rates. The objective of this study is to identify the main prognostic factors affecting survival and recurrence of gastric adenocarcinoma.

Patients and Methods

Retrospective study involving 60 patients undergoing surgery for gastric adenocarcinoma in the General Surgery Department of Habib Bougatfa Hospital, Bizerte, from January 2012 to March 2016.

Patients

It included: Patients undergoing surgery for gastric adenocarcinoma and having gastric resection during the study period.

It was not included: Patients who were not operated (metastatic or unresectable cancer), adenocarcinoma of the cardia, and other histological forms (lymphoma, endocrine tumors, stromal...
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Differentiated in 50% of cases and undifferentiated in 35% of cases. Adenocarcinoma was well differentiated in 15% of cases, moderately differentiated in 50% of cases and undifferentiated in 35% of cases. The tumor was classified T1-T2 in 10 cases and T3-T4 (advanced tumor) in 50 cases. Lymph node invasion was observed in 70% of cases. The median number of lymph nodes removed was 14. Overall survival was 58% at 3 years (Figure 1). The average survival was 22 months. In univariate analysis, the factors that influenced overall survival were: ratio of invaded lymph node/removed lymph node >10%, tumor stage 3 and 4, the occurrence of recurrence, presence of lymph nodes in perioperative, signet-ring cell carcinoma, and lymph node invasion. In multivariate analysis, lymph node invasion, the occurrence of recurrence, the number of lymph nodes removed <15, the presence of signet-ring cell carcinoma and tumor stage 3 and 4 decreased survival significantly (Table 1). The median survival without recurrence was 20 months. Disease-free survival at 1 year, 3 years and 5 years were respectively 88.6%, 73.3% and 70% (Figure 2). Eleven patients had recurrence (18% of cases). The median time to onset of recurrence was 12 months. Of the 11 patients who had a recurrence, 9 patients died. The factors predictive of recurrence in univariate analysis were: the presence of lymph nodes in perioperative, signet-ring cell carcinoma, gastric liniments, and the ratio invaded nodes/removed nodes >10%, the tumor differentiation and the realization of total gastrectomy. After multivariate analysis independent factors that increased the risk of recurrence were: the presence of lymph nodes in perioperatively and signet-ring cell carcinoma (Table 2).

Discussion

Gastric adenocarcinoma is a cancer with a poor prognosis. This poor prognosis depends on several factors that can be classified into patient-related factors, others related to the tumor and those related to surgery. The analysis of the different prognostic factors makes it possible to adapt the therapeutic management in order to improve the results in terms of survival and recurrence. A review of literature showed that 5-year survival of resected gastric adenocarcinoma ranged from 26% to 60%, 10-year survival ranged from 26.3% to 34.2%, and median survival is about 23.2% at 48 months [4]. Our results in terms of overall survival approach the results of the literature.

Regarding prognostic factors related to the patient, the majority of authors agree that epidemiological factors (age, sex) do not influence the prognosis of gastric adenocarcinoma [5,6], and in our study neither survival nor recurrence were influenced by these factors. The presence of a palpable abdominal mass at the clinical examination of the patient reflects the evolved nature of the tumor and is considered a poor prognostic factor affecting survival. Eight percent of our patients had an abdominal mass on examination and its presence did not affect the prognosis. This could be explained by the fact that the presence of a mass was not necessarily synonymous with the advanced stage of the tumor. Some studies showed an...
The objective of surgery in gastric adenocarcinoma is to obtain a curative excision of the gastric lesion (R0) with adequate lymph node dissection. In our study, curative resection was performed in 56 patients (93%). The 5-year survival was 60% in case of curative resection (R0) and 0% in case of palliative resection leaving a macroscopic tumor residue (p<0.001). The curative resection is considered as an important factor of prognosis [17,18]. The extent of lymph node dissection was a matter of debate. The benefit of extensive dissection (D2 or more) remains controversial. Western surgeons did not find any benefit from extensive dissection in the improvement of survival, indeed the results of the Dutch and British randomized studies, did not show a gain of overall survival after D2 dissection compared to the D1 dissection, the expenses postoperative mortality rates much higher [19,20]. Contrary to this point of view, Japanese surgeons demonstrated that better locoregional control by extensive dissection results in improved survival by preventing locoregional recurrences and thus reducing distant metastases. There were a few randomized controlled trials, published over the past two decades, evaluating the impact of different types of ganglion dissection on survival.

**Conclusion**

The prognosis of gastric adenocarcinoma remains poor. Curative treatment is based on surgical excision with lymph node dissection. The overall prognosis of gastric adenocarcinoma remains bleak. In our series as in the literature, there are several factors influencing the prognosis. Lymph node invasion and anato-mopathological factors were the most important.

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Table 1: Independent factors that influenced overall survival in multivariate analysis.

<table>
<thead>
<tr>
<th>Variables</th>
<th>p</th>
<th>Adjusted Hazard ratio</th>
<th>Confidence Interval (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lymphatic invasion</td>
<td>0.023</td>
<td>4</td>
<td>0.4 – 38.4</td>
</tr>
<tr>
<td>Tumor stage 3 and 4</td>
<td>0.039</td>
<td>1</td>
<td>0.1 – 10.4</td>
</tr>
<tr>
<td>number of lymph nodes removed &lt;15</td>
<td>0.041</td>
<td>1.5</td>
<td>0.4 – 5.3</td>
</tr>
<tr>
<td>Signet-ring Cell</td>
<td>0.024</td>
<td>2.3</td>
<td>0.6 – 9</td>
</tr>
<tr>
<td>Occurrence of recurrence</td>
<td>0.017</td>
<td>4.6</td>
<td>1.3 – 16.1</td>
</tr>
</tbody>
</table>

Table 2: Independent factors of recurrence in multivariate analysis.

<table>
<thead>
<tr>
<th>Variables</th>
<th>p</th>
<th>Adjusted Hazard ratio</th>
<th>Confidence Interval (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signet-ring Cell carcinoma</td>
<td>0.039</td>
<td>5.2</td>
<td>1.1 – 25.1</td>
</tr>
<tr>
<td>Presence of lymph nodes</td>
<td>0.03</td>
<td>4.3</td>
<td>1.1 – 16.7</td>
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</tbody>
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References


