The Risk Factors Affecting Survival in Colorectal Cancer in Taiwan

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Background
Colorectal cancer (CRC) is the second and third most commonly diagnosed cancer type in females and males, respectively, representing almost 10% of the global cancer incidence. The incidence of CRC in Taiwan is rising. Cancer survival is an indicator of the overall effectiveness of health services in the management of patients. In this study, we sought to determine the five-year survival rate of patients diagnosed with CRC and to determine factors affecting survival.

Methods
1. 869 patients with CRC were included in this study.  
2. Survival analysis was performed using Kaplan-Meier curves, and differences between the curves were analyzed using the log-rank test. Cox proportional hazards regression models were used to analyze survival by each variable.

Results
The five-year survival rate and the mean survival time after cancer diagnosis were 68.7% and 71.27 ± 1.27 months (Fig. 1). Perineural nerve invasion, distant metastasis, age, pathological differentiation grade, obstruction and regional lymph node metastasis were found to be independent predictors of the survival and prognosis of patients with CRC (Table. 1).

Table 1. Forward stepwise Cox regression analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>HR</th>
<th>95% CI</th>
<th>Wald</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age ≥ 65 years older</td>
<td>2.36</td>
<td>1.76-3.17</td>
<td>32.68</td>
<td>&lt; .001</td>
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<td>Pathological differentiation</td>
<td>High grade</td>
<td>1.84</td>
<td>1.27-2.66</td>
<td>10.54</td>
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<tr>
<td>Perineurial invasion</td>
<td>Yes</td>
<td>2.90</td>
<td>2.03-4.14</td>
<td>34.26</td>
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<tr>
<td>Distant metastasis</td>
<td>Yes</td>
<td>2.78</td>
<td>2.00-3.87</td>
<td>36.48</td>
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<tr>
<td>Obstruction</td>
<td>Yes</td>
<td>1.38</td>
<td>1.04-1.84</td>
<td>4.94</td>
</tr>
<tr>
<td>Regional lymph node</td>
<td>metastasis</td>
<td>Yes</td>
<td>1.81</td>
<td>1.28-2.57</td>
</tr>
</tbody>
</table>

Figure 1. Kaplan-Meier curves of Colorectal Cancer by Stage of Disease

Conclusion
Long-term survival from colorectal cancer remains good with 68.7% of patients being alive five years after their diagnosis. In this study, we found that perineural nerve invasion, distant metastasis, age, pathological differentiation grade, obstruction and regional lymph node metastasis are independent predictors of the survival and prognosis of patients with CRC. Perineural nerve invasion and distant metastasis appeared to be important prognostic factors affecting the entire patient cohort, and the earlier detection of CRC would improve patient survival. One limitation of this study was the small sample size; in addition, the findings were generated using data from a single medical center hospital in North Taiwan. Thus, the results of some survival comparisons were not significant. These limitations should be considered when applying these results to other districts in Taiwan that may have demographic differences. Furthermore, multicenter studies should be conducted to merge patient datasets for further research in Taiwan.