Better health together

A structured pre-surgery pre-habilitation for elderly patients undergoing elective surgery significantly improves surgical outcomes and reduces cost

Jinging Wu¹, Frederick H Koh¹, Caroline H Loh², Winson J Tan³, Leonard ML Ho¹, Dulcena Yen³, Sharmini S Sivarajah¹, Fung-Joon Foo¹, Min-Hoe Chew¹

INTRODUCTION

With increasing global life expectancy, the number of major surgeries done for the elderly invariably increases.

As age is a non-modifiable risk factor for increased morbidity and mortality, it is therefore important for peri-operative optimization of modifiable risk factors in this patient population.

AIMS

To examine the effectiveness of a structured pre-habilitation programme for elderly colorectal cancer patients in improving surgical outcomes.

METHODS

- Interventional cohort study
- Feb 2017 to Jan 2021
- Single acute care hospital

- Inclusion criteria:
  - Aged 70 years and above
  - Diagnosis of resectable colorectal cancer
  - Fit for elective surgery
  - Able to comply and attend dietician and physiotherapy sessions

- Exclusion criteria:
  - Patients with tumour-related crisis

- Composition of Programme for Enhanced Elderly Recovery @SKH (PEERS):
  - 2-4 weeks long before surgery
  - Geriatric specialist assessment
  - Nutritional supplementation by dietician
  - Resistance training by physiotherapist

- Comparator (Non-PEERS): historically collected patients who were treated before the initiation of the programme (2016-17)

RESULTS

Table 1: Baseline characteristics

<table>
<thead>
<tr>
<th></th>
<th>PEERS (%)</th>
<th>non-PEERS (%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>80</td>
<td>23</td>
<td>-</td>
</tr>
<tr>
<td>Median age, years (range)</td>
<td>80 (70-98)</td>
<td>77 (70-90)</td>
<td>0.26</td>
</tr>
<tr>
<td>Male</td>
<td>44 (55.0)</td>
<td>12 (52.2)</td>
<td>0.82</td>
</tr>
<tr>
<td>Recruitment weight, kg (range)</td>
<td>58.3 (35.3 – 84.0)</td>
<td>59.3 (29.8 – 77.7)</td>
<td>0.70</td>
</tr>
<tr>
<td>Serum Albumin, g/L (range)</td>
<td>37 (24 – 51)</td>
<td>39 (18 – 46)</td>
<td>0.12</td>
</tr>
<tr>
<td>Location of tumour</td>
<td></td>
<td></td>
<td>0.15</td>
</tr>
<tr>
<td>Colonic</td>
<td>52 (65)</td>
<td>19 (82.6)</td>
<td></td>
</tr>
<tr>
<td>Rectal</td>
<td>28 (35)</td>
<td>4 (17.4)</td>
<td></td>
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</tbody>
</table>

The baseline characteristics of both groups of patients are similar. Improvement of functional factors per patient, but did not reach statistical significance.

Figure a: Progress after prehabilitation

Physiotherapy Outcome Measures (Week 2)

- 6 min Walk Test
- Functional Reach Test
- 30s Chair Rise
- Gait Speed
- Grip Strength

Percentage of patients that showed improvement
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**RESULTS**

Table 2: Outcome details

<table>
<thead>
<tr>
<th></th>
<th>PEERS (%)</th>
<th>Non-PEERS (%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median length of hospitalization, days (range)</td>
<td>9 (4–32)</td>
<td>11 (5-84)</td>
<td>0.01</td>
</tr>
<tr>
<td>Discharge disposition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home</td>
<td>67 (83.7)</td>
<td>20 (87.0)</td>
<td>0.72</td>
</tr>
<tr>
<td>Rehabilitation facility</td>
<td>11 (13.7)</td>
<td>2 (8.7)</td>
<td></td>
</tr>
<tr>
<td>Nursing home</td>
<td>1 (1.2)</td>
<td>1 (4.5)</td>
<td></td>
</tr>
<tr>
<td>30-day mortality</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>1.00</td>
</tr>
<tr>
<td>30-day morbidity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Clavien-Dindo ≥III</td>
<td>3 (4.1)</td>
<td>4 (17.4)</td>
<td>0.21</td>
</tr>
</tbody>
</table>

After multiple linear regression, controlling for both type of operation and serious morbidity, the PEERS groups had, on average, **6.5 days less stay in hospital** (CI: 2.9-10.1, p=0.001).

This would translate to an estimated healthcare cost savings of up to **11,220 SGD**.

**CONCLUSIONS**

With a standardized pre-habilitation programme for elderly patients before elective colectomies:
- Duration of hospitalization could be reduced
- Improvement in quality of life after surgery (1-month)
- Reduction in healthcare costs

**REFERENCES**