Faculty Disclosure

<table>
<thead>
<tr>
<th></th>
<th>No, nothing to disclose</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Yes, please specify:</td>
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</tbody>
</table>
Chemotherapy-induced peripheral neuropathy

Major side effect of cancer treatment
Reduces treatment tolerability
Leads to long term deficits

32 MILLION Cancer survivors worldwide

WHAT IS CHEMOTHERAPY-INDUCED PERIPHERAL NEUROPATHY (CIPN)?
It is a debilitating side effect of cancer treatment that may occur when chemotherapeutic agents damage the peripheral nerves that are outside the brain and spinal cord.

CHEMOTHERAPY AGENTS WHICH MAY CAUSE CIPN
- Cisplatin, carboplatin, and oxaliplatin
- Paclitaxel, docetaxel, and cabazitaxel
- Ixabepilone
- Vinblastine, vincristine, vinorelbine, and etoposide
- Thalidomide, lenalidomide, and pomalidomide
- Bortezomib and carfilzomib
- Erubulin

CIPN symptoms begin in the extremities—the hands and feet—and then move upwards.

SYMPTOMS
CIPN affects activities of daily living and quality of life.
Pain
 Burning
 Tingling
 Numbness
 Electric shock
 Pins and needles
 Temperature sensitivity

This infographic was developed by The Neuropathy Association for September's Pain Awareness Month 2014 with support from DNA/BioSciences. For more information, visit www.neuropathy.org or www.DNABio.com
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UNSW SYDNEY
CIPN and Cancer Survival

Data derived from: AIHW Cancer in Australia: an overview 2014; 5 year relative survival from selected cancers, Australia 2007-2011
CIPN research gaps

- No method of identifying at-risk patients
- Lack of quantitative and functionally relevant assessment tools
- No effective neuroprotection
- Impact is poorly understood

IN FOCUS

National survey of cancer survivors

Aim: to address the impact of CIPN nationwide

- Anonymous online survey
- Inclusion: must have received neurotoxic chemotherapy
### Survey content

<table>
<thead>
<tr>
<th>Item content</th>
<th>Validated measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td></td>
</tr>
<tr>
<td>Cancer diagnosis and treatment</td>
<td></td>
</tr>
<tr>
<td>CIPN symptoms</td>
<td>• FACT/GOG-NTx neurotoxicity subscale</td>
</tr>
<tr>
<td></td>
<td>• DN4 neuropathic pain measure</td>
</tr>
<tr>
<td>Other cancer-related side effects</td>
<td></td>
</tr>
<tr>
<td>Physical activity levels</td>
<td>• International Physical Activity Questionnaire</td>
</tr>
<tr>
<td>Non-cancer health conditions</td>
<td>• Self-Administered Comorbidity Questionnaire</td>
</tr>
<tr>
<td>Quality of Life</td>
<td>• Short-Form 36 (SF-36)</td>
</tr>
</tbody>
</table>
Results: Demographics

- 894 respondents to date; analysis of first 500
- Mean age: 58 ± 10.4 years, Range: 21 – 85 years
- 84% female

<table>
<thead>
<tr>
<th>Cancer type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast cancer</td>
<td>65%</td>
</tr>
<tr>
<td>Myeloma</td>
<td>9%</td>
</tr>
<tr>
<td>Colorectal cancer</td>
<td>9%</td>
</tr>
<tr>
<td>Ovarian cancer</td>
<td>5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemotherapy type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Docetaxel</td>
<td>35%</td>
</tr>
<tr>
<td>Paclitaxel</td>
<td>32%</td>
</tr>
<tr>
<td>Thalidomide</td>
<td>8%</td>
</tr>
<tr>
<td>Oxaliplatin</td>
<td>8%</td>
</tr>
<tr>
<td>Bortezomib</td>
<td>7%</td>
</tr>
<tr>
<td>Don’t know name of chemotherapy</td>
<td>12%</td>
</tr>
</tbody>
</table>
Neuropathic Symptoms

- 80% report CIPN after completing chemotherapy
- Duration of CIPN: 3.5 ± 3.2 years; Range: <1 year – 22 years
- 74% report currently experiencing CIPN
- 25% of those with CIPN report no improvement in symptoms since finishing chemotherapy
# Impact of chemotherapy side effects

<table>
<thead>
<tr>
<th>Side effect</th>
<th>% rating: biggest impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatigue</td>
<td>42.9%</td>
</tr>
<tr>
<td>CIPN</td>
<td>21.8%</td>
</tr>
<tr>
<td>Pain</td>
<td>13.0%</td>
</tr>
<tr>
<td>Insomnia</td>
<td>9.7%</td>
</tr>
<tr>
<td>Changes in sexual function</td>
<td>9.7%</td>
</tr>
<tr>
<td>Anxiety</td>
<td>9.1%</td>
</tr>
</tbody>
</table>
Impact of CIPN

• Moderate negative relationship between CIPN and QoL
  • via FACT/GOG-NTx and SF-36 total score ($r = -0.57$, $p<0.001$)

• Respondents with CIPN had lower QoL (SF-36 total score; $p < 0.001$)
  • Physical Functioning ($p < 0.001$)
  • Role limitations due to physical health ($p < 0.001$)
  • Energy/fatigue ($p < 0.001$)
  • Pain ($p < 0.001$)
  • General Health ($p < 0.001$)

• CIPN has an impact on QoL across domains associated with poorer physical health and energy levels
Physical Activity

- Australian government physical activity guidelines:
  - 150 – 300 min moderate or 75 – 150 min vigorous intensity activity
  - i.e. minimum of 600 MET-minutes weekly

- Respondents who report meeting guidelines had lower FACT/GOG-NTx subscale scores ($p = 0.006$)

- Respondents who report meeting guidelines had better QoL scores via the SF-36 ($p < 0.001$)

- Could reflect positive impact of exercise or higher levels of disability in those with more severe CIPN

- Tailored exercise programs may be beneficial for patients with CIPN
Conclusions

• CIPN has a significant impact on cancer survivors
  • Experienced by a significant percentage of those who receive neurotoxic chemotherapy
  • Symptoms often last for years
  • A proportion of respondents see no improvement in symptoms with time
  • Affects functioning and QoL across a range of domains
  • Lasting impact supports need for further research into assessment, prevention and treatment

• Survey runs until 2019
Acknowledgements

Dr Susanna Park
Prof David Goldstein

IN FOCUS investigators

Survey respondents

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