Operating in Hot Poison: HIPEC for Peritoneal Mesothelioma

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Objectives

1. Understand the role of cytoreductive surgery and HIPEC for malignant peritoneal mesothelioma in 2019

2. Review the recent outcomes of the Ontario Peritoneal Malignancy Program

3. Learn about ongoing research for MPM
Peritoneal Mesothelioma

- M=F, peak age 55-60 y
- Rare malignancy: ~25% of all meso, 60/year in Canada
- Systemic therapy (Cis/Pem) 25% response rate and median survival is about 1 year
- Surgery continues to be the main treatment: fails due to local recurrence
- Intensive loco-regional treatment strategy: CRS & HIPEC
Treatment for peritoneal malignancies utilizing cytoreductive surgery with intraperitoneal hyperthermic chemotherapy (HIPEC) was not offered by any hospital in Ontario.

There were only three provinces in Canada offering cytoreductive surgery and HIPEC (Quebec/Alberta/Nova Scotia) for their eligible patients.
Peritoneal Mesothelioma
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Peritoneal Mesothelioma

- Cytoreductive Surgery
  - Localized peritoneal stripping where nodules attached
  - Resection of involved organs: colon, small bowel, ovaries, uterus, stomach, spleen.
  - * bowel sparing
  - 8 hour + operation
Rationale for Hyperthermic Intraperitoneal Chemotherapy (HIPEC):

- high concentration of drug to tumour nodules but not systemically
- heat alone (42.5 °C) is cytotoxic in vitro
- heat enhances the tumorcidal action of many drugs such as oxaliplatin, cisplatin, MMC
Peritoneal Mesothelioma

Chemotherapy infused at 42-43°C

- Closed circuit (30 minutes)
  - Pump, heater, heat exchanger, real time temp monitor

- Closed abdomen technique
The Ontario Peritoneal Surface Malignancy Program

- **nurse co-ordinator**
  - Triage referrals
  - Arranging clinic visits/testing? F/U
  - Follow patients through surgery from pre-op clinic to home
  - A resource for patients after discharge
  - Patient information pamphlet

- **Database**
  - Research co-ordinator
  - Maintain prospective data on all PSM patients seen in clinic.
  - Assist/Perform research projects
February 1\textsuperscript{st}, 2011 we performed our first CRS & HIPEC procedure. 280 as of September 2018.

176 females/ 104 males
123 Appendiceal LG neoplasms, 129 colorectal/SB/HG appendix PC, 27 mesothelioma, 1 sarcoma
Intra-op PCI range 2-39 (39 max)

Procedures range 6 - 24 hours of surgical time including 30 (oxali) or 90 (MMC) minutes of closed HIPEC, inflow 43° outflow 40°
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Analysis of first 87 patients (5 years of follow up):
Overall: 54% 5 year OS
Meso (n=7): 71.4% 5 year OS
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Morbidity and Mortality

90 day mortality: 2(2.3%)

56% overall morbidity with 20.6% significant morbidity (DINDO 3/4: bleeding, anastomotic leak, fistula, abscess, PE, pleural effusion, pneumonia, wound dehiscence)

37% TPN for ileus > 7 days

<table>
<thead>
<tr>
<th>Complication</th>
<th>No. Patients (%)</th>
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<tbody>
<tr>
<td>Ileus requiring TPN</td>
<td>16 (34.8)</td>
</tr>
<tr>
<td>Surgical Site Infection (superficial or deep)</td>
<td>5 (10.8)</td>
</tr>
<tr>
<td>Urinary Tract Infection</td>
<td>4 (8.6)</td>
</tr>
<tr>
<td>Bleeding requiring transfusion or intervention</td>
<td>4 (8.6)</td>
</tr>
<tr>
<td>Venous Thromboembolism</td>
<td>3 (6.5)</td>
</tr>
<tr>
<td>Other</td>
<td>3 (6.5)</td>
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<tr>
<td>Death</td>
<td>2 (4.3%)</td>
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Peritoneal Surface Malignancy

Example

62 year old female with increasing abdominal distension.

U/S showed ++ fluid.

CT guided biopsy: Mesothelioma

At time of consult needed paracentesis every 2 weeks for 6 – 8 litres of ascites drainage at a time.
The Ontario Peritoneal Surface Malignancy Program
Ongoing initiatives

• Prospective database
  • Matched tumour/normal tissues banked

• Quality of life study
  • Patients surveyed before and after (3, 6, 12, 24 months) with standard QOL surveys
THE TEAM

Surgical oncology: McCart, Govindarajan, Bischof
  - surgical oncology fellows
  - residents
Medical oncology: Dr. Ron Burkes

OR Team: nursing, anesthesia

Clinical Co-ordinator:
  - Soojin Lee

Research Co-ordinator
  - Mohana
Thank You