Central Venous Catheter Infections among the Adult Oncology Patients: A Retrospective, Single Irish Institution Experience

Jane SY Sui, Geoffrey Ronan, Claire Brady, Margolzata Cwiak, Muhammad Adam Dawod, Deirdre Kelly, Richard Bambury, Derek G Power, Seamus O’Reilly, Deirdre O’Mahony

Department of Medical Oncology
Cork University Hospital, Ireland
Disclosure

• All authors have declared no conflicts of interest.
Introduction

• Central venous catheter (CVC) insertion is common among the adult oncology population.
• CVC can facilitate:
  – Administration of cytotoxic chemotherapy or supportive medications
• However, CVC infections impacts:
  – Prolonged hospitalization
  – Delay in cytotoxic administration
  – Removal of CVC device
  – Sepsis-related mortality
Types of Central Venous Catheter

Subcutaneous port

PICC (Peripherally inserted central catheter)
Study objective

• To perform a retrospective study to evaluate the impact of CVC infections in our institution.
Methodology

- Patients (pts) who had CVC insertions performed from January 2012 to April 2017 in Cork University Hospital (CUH) were included.

- Clinical characteristics extracted from electronic database included:
  - Age
  - Cancer subtype
  - Date of CVC insertion, infection and removal
  - Admission with CVC-related infection
  - Type of micro-organisms
  - Length of hospitalization
  - Mortality rate
## Baseline Characteristics

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Results n=731</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Median age</strong></td>
<td>57 (Range: 16 – 85)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>544 (74%)</td>
</tr>
<tr>
<td>Male</td>
<td>187 (26%)</td>
</tr>
<tr>
<td><strong>Types of CVC</strong></td>
<td></td>
</tr>
<tr>
<td>Porta-cath</td>
<td>454 (50%)</td>
</tr>
<tr>
<td>PICC (Peripherally inserted central catheter)</td>
<td>454 (50%)</td>
</tr>
<tr>
<td><strong>Mean length of CVC in-situ prior to removal</strong></td>
<td>250 days (Range: 4 – 1264)</td>
</tr>
</tbody>
</table>
Cancer Subtypes and Aim of Therapy

**Cancer Subtypes**
- Breast: 45%
- Gastrointestinal: 20%
- Lymphoma: 13%
- Genito-urinary: 2%
- Gynaecology: 9%
- Head & neck: 3%
- Sarcoma: 2%
- Others: 2%

**Aim of Therapy**
- Metastatic: 308 patients
- Adjuvant: 232 patients
- Unknown: 94 patients
- Neo-adjuvant: 75 patients
- Locally advanced: 22 patients
## CVC-related Infection

<table>
<thead>
<tr>
<th></th>
<th>Results n=57, %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Median age</strong></td>
<td>61 (Range: 18 – 75)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>31 (54.4)</td>
</tr>
<tr>
<td>Male</td>
<td>26 (45.6)</td>
</tr>
<tr>
<td><strong>Aim of therapy</strong></td>
<td></td>
</tr>
<tr>
<td>Metastatic</td>
<td>21 (36.8)</td>
</tr>
<tr>
<td>Unknown</td>
<td>18 (31.6)</td>
</tr>
<tr>
<td>Neo-adjuvant</td>
<td>10 (17.5)</td>
</tr>
<tr>
<td>Adjuvant</td>
<td>6 (10.5)</td>
</tr>
<tr>
<td>Locally advanced</td>
<td>2 (3.5)</td>
</tr>
<tr>
<td><strong>Types of CVC-related infections</strong></td>
<td></td>
</tr>
<tr>
<td>PICC</td>
<td>40 (70.2)</td>
</tr>
<tr>
<td>Porta-cath</td>
<td>17 (29.8)</td>
</tr>
<tr>
<td><strong>Mean length of hospitalization due to CVC-related infections</strong></td>
<td>14.5 days (Range: 1 – 50)</td>
</tr>
<tr>
<td><strong>Mortality due to CVC-related infections</strong></td>
<td>4 (1)</td>
</tr>
</tbody>
</table>
Types of Micro-organisms in CVC-related Infections

- Coagulase negative Staphylococcus
- Coagulase positive Staphylococcus
- Streptococcus
- Others
- Enterobacter
- Pseudomonas
- E. coli
- Stenotrophomonas
- Others
- Candida
Conclusion

• CVC used is associated with increased risk of infection among younger <66 years.
  – Cumulative incidence of CVC-related infection in our institution was 8%.

• PICC line insertion was associated with higher CVC-related infections.

• CVC-related infections increases burden of healthcare resources with:
  – Prolonged hospitalization
  – Compromising cancer care

• Local guidelines are essential in identifying pts suitable for CVC insertion.
THANK YOU