Cancer and the Heparins

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Overview

• Mechanisms of cancer induced thrombosis
• Guidelines for prevention and treatment of VTE in cancer patients
• Links between heparins and cancer growth
  – Mechanisms
  – Clinical data

Cancer and the Heparins

The role of LMWH in Cancer Patients
(LMWH = low molecular weight heparins.)
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Virchow’s Triad


Metastatic Disease
Local-Regional Disease

VTE within Two years of Cancer Diagnosis

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VTE prevention in surgical cancer patients: ASCO recommendations (2007)

1. Major surgery → thromboprophylaxis using LMWH.
   - should be commenced preoperatively
   - Mechanical methods may be added, but should not be used as monotherapy
2. Duration: 7 to 10 days postoperatively, or up to 4 weeks in patients undergoing major abdominal or pelvic surgery for cancer with high-risk features.

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VTE prevention in cancer patients

undergoing chemotherapy

- Routine prophylaxis not recommended
- Exception: myeloma patients treated thalidomide + chemotherapy or dexamethasone
- Research identifying patients with cancer most likely to develop VTE is urgently needed

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VTE therapy in cancer patients: ASCO recommendations (2007)

- Preferred: LMWH during 6 months
- Indefinite anticoagulant therapy in pts with metastatic disease / chemotherapy (expert opinion)
- Vena cava filter: only when contraindications to anticoagulant therapy

VTE therapy in cancer patients: LMWH or VKA? CLOT study

Risk reduction = 52%

Lee et al. NEJM 2003

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**12th Edition - Starters Package in Laparoscopy**
IRCAD/EITS Strasbourg (France).
Teacher/Guest speaker GSK : Prof. Dr. Wim CEELEN – UZ Gent
October 20 + 21, 2011.

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The INPACT Study (Improving with Nadroparin the Prognosis in Advanced Cancer Treatment)

Patients with cancer of lung, prostate, or pancreas

Usual care (n=250) → Usual care + Nadroparin *(n=250)

Primary endpoint: Mortality

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Ongoing Randomized Clinical Trials Testing the Effect of LMWH on Survival in Cancer Patients

<table>
<thead>
<tr>
<th>Study</th>
<th>LMWH</th>
<th>Tumor Type(s)</th>
<th>Principal Investigator</th>
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<td>Nadroparin</td>
<td>Advanced prostate, non-small cell lung, pancreatic</td>
<td>H. Buller</td>
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<td>FOCUS</td>
<td>Dalteparin</td>
<td>Ovarian</td>
<td>A. Lee</td>
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<tr>
<td>FRAGMATIC</td>
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<td>ABEL</td>
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<td>TILT</td>
<td>Tinzaparin</td>
<td>Non-small cell lung (I, II, III-A)</td>
<td>G. Meyer &amp; P. Girard</td>
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<tr>
<td>GASTRANOX</td>
<td>Enoxaparin</td>
<td>Gastric (III/IV)</td>
<td>A. K. Kakkar</td>
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INPACT=Improving with Nadroparin the Prognosis in Advanced Cancer Treatment; FOCUS=Fragmin® in Ovarian Cancer: Utility on Survival; FRAGMATIC=Fragmin® Added to Standard Therapy in Patients with Lung Cancer; ABEL=Adjuvant Bemiparin in Small Cell Lung Carcinoma; TILT=Tinzaparin in Lung Tumors.

Conclusions

- VTE is common in cancer patients, and associated with a worse outcome
- LMWH is the standard in perioperative prevention and treatment of DVT in cancer patients
- LMWH’s may exert antitumor and/or antiangiogenic effects and improve survival in cancer patients

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