**Abstract:**

Long-term cardiovascular outcomes after percutaneous coronary interventions in patients with acute coronary syndrome and cancer

**Authors:**
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**Topic(s):**
Cardio-Oncology

**Citation:**

Background: Over time, the use of PCI increased and mortality decreased comparably in patients with ACS and cancers. Although the adverse cardiac effect of cancer has been widely reported, we know less on whether lung cancer confers worse clinical outcomes in patients with established ACS, particularly those undergoing PCI.

Methods: All cancer patients who were admitted in the hospital with ACS as initial diagnosis and underwent PCI from January 2006 to December 2016 were enrolled, and were divided into 2 groups according to their malignancy types: lung cancer and others. Population data was collected and clinical follow-up was performed by either telephone contact or office visit. Survival was graphically represented using Kaplan-Meier curves. Differences in survival rates were compared using the log-rank test. Analysis was performed with SPSS statistical software, version 22.0 for Windows. See Figure 1.

Results: 16,062 patients suffered from various cancers and 55,401 patients underwent PCI. After cross referencing the two patient lists, 337 patients were enrolled who underwent cancer prior to ACS, and 15.1% (n=51) had a medical history of lung cancer. See Figure 2 and 3. Male gender was more prevalent in the lung cancer group than other cancers group (84.3% vs 60.5%, P=0.01). There was no significant difference between lung cancer and other cancers group in the presence of traditional cardiovascular risk factors, such as hypertension, hyperlipidemia, obesity, diabetes mellitus, history of smoking, history of drinking and the family history of coronary artery disease (P>0.05 for all). Among all coronary complex lesions, calcified lesions was more prevalent in lung cancer group (21.6% vs 11.5%, P=0.04), although there was no significant difference between two groups in left main lesions, bifurcation lesions and CTO lesions (P>0.05 for all). For anticancer therapy, patients with lung cancer received more radiotherapy (29.4% vs 13.6%, P=0.01) and chemotherapy (37.3% vs 25.5%, P=0.08). Follow-up was available for 289 of the 337 patients (85.8%). See table 1. The incidence of cardiovascular death (5.9% vs 1.0%, P=0.02) was higher in the lung cancer group. As shown the Kaplan-Meier curves in Figure 1, the survival rate free from all-cause death (log rank P=0.034, Figure 4A) and cardiovascular death (log rank P=0.013, Figure 4B) was significantly lower in lung cancer group than in other cancers group during the follow-up.

Conclusions: Lung cancer has a non-negligible prevalence in patients with ACS undergoing PCI, with significantly worse long-term cardiovascular outcomes. The results of our study reinforce the importance of understanding to patients who need closer follow-up, careful evaluation, and intervention.
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<table>
<thead>
<tr>
<th>Variable</th>
<th>Lung cancer (n=51)</th>
<th>Other cancer (n=286)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACCE</td>
<td>6(11.8)</td>
<td>56(19.0)</td>
<td>0.359</td>
</tr>
<tr>
<td>All-cause death</td>
<td>6(11.8)</td>
<td>150(52.5)</td>
<td>0.016</td>
</tr>
<tr>
<td>Cardiovascular death</td>
<td>9(17.3)</td>
<td>3(0.0)</td>
<td>0.006</td>
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<tr>
<td>Cancer death</td>
<td>3(0.6)</td>
<td>10(3.6)</td>
<td>0.436</td>
</tr>
<tr>
<td>Cardiac shock</td>
<td>3(0.6)</td>
<td>5(0.7)</td>
<td>0.951</td>
</tr>
<tr>
<td>Cardiovascular revascularization</td>
<td>142(27.9)</td>
<td>80(18.8)</td>
<td>0.035</td>
</tr>
<tr>
<td>PCI</td>
<td>3(0.6)</td>
<td>42(14.7)</td>
<td>0.004</td>
</tr>
<tr>
<td>CABG</td>
<td>3(0.6)</td>
<td>4(1.4)</td>
<td>0.760</td>
</tr>
</tbody>
</table>

Table 1. Outcomes between the two groups

Fig 1. Technology roadmap of the study
Fig 2. Trend of increasing prevalence with the year
Fig 3. Composition ratio of various types of cancers
Fig 4. Kaplan-Meier survival curves for all-cause death (4A) and cardiovascular death (4B)