WHY DOES EVAR FOR AAA PATIENTS INCREASE THEIR CANCER RISK: IS IT FROM THE RADIATION DURING THE PRIMARY PROCEDURE, SURVEILLANCE OR BOTH

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Disclosure
Matt Thompson.
✓ I have the following potential conflicts of interest to report:
  Consulting
  Employment in industry
  Shareholder in a healthcare company
  Owner of a healthcare company
  Other(s)
  I do not have any potential conflict of interest

ATTRIBUTABLE RISK OF CANCER AND SURVEILLANCE

Estimating the risk of solid organ malignancy in patients undergoing routine computed tomography scans after endovascular aneurysm repair

Greenhalgh et al Lancet 2016; 388: 2366

Average risk of exposure related death 0.8%
Lifetime risk increase in radiation induced leukemia and solid organ tumor >2.7%

EVAR 1 TRIAL AND CANCER DEATHS

EVAR procedure or surveillance implicated?
HES ANALYSIS

- Patients undergoing AAA repair 2005-2013 (England)
- New cancer diagnoses, hospital admissions and deaths tracked
- 1st - Survival free from abdominal malignancy and death
- 2nd - Cancer-free survival and freedom from lung cancer and non-abdominal obesity-related cancers
- Compared primary mode of EVAR surveillance

FREEDOM FROM ABDOMINAL MALIGNANCY / DEATH

- HR= 1.16; 95% CI 1.05-1.29, p-value: 0.0036

FREEDOM FROM ALL CANCER / DEATH

- HR=1.10, 95% CI 1.03 – 1.18, p-value: 0.0041

LUNG AND OBESITY CANCER

<table>
<thead>
<tr>
<th>Outcome</th>
<th>G-formula HR (95% CI)</th>
<th>IPW HR (95% CI)</th>
<th>IPW p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital admissions and death caused by abdominal cancer</td>
<td>1.11 (1.02 - 1.23)</td>
<td>1.16 (1.05 - 1.29)</td>
<td>0.0036</td>
</tr>
<tr>
<td>Hospital admissions and death caused by any cancer</td>
<td>1.09 (1.02 - 1.15)</td>
<td>1.10 (1.03 - 1.18)</td>
<td>0.0041</td>
</tr>
<tr>
<td>Hospital admissions and death caused by lung cancer</td>
<td>1.01 (0.87 - 1.14)</td>
<td>1.04 (0.92 - 1.18)</td>
<td>0.5118</td>
</tr>
<tr>
<td>Hospital admissions and death caused by non abdominal obesity cancer</td>
<td>1.08 (0.52 - 1.77)</td>
<td>1.12 (0.69 - 1.83)</td>
<td>0.6492</td>
</tr>
</tbody>
</table>

FREEDOM FROM ABDOMINAL CANCER: CT SURVEILLANCE

- HR=0.87, 95% CI 0.67 – 1.13, p-value: 0.308
HES STUDY SUMMARY FINDINGS

- EVAR associated with an increase in abdominal cancer
- No such association demonstrated for lung and non-abdominal obesity related cancer
- No apparent difference in abdominal cancer in EVAR patients under CT or non-CT surveillance

IMPLICATIONS

- ALARA: as low as reasonably achievable
- Dose reduction procedure and technology
- Surveillance paradigm needs to be challenged and refined
- Effect on interventional staff becoming better defined (El-Sayed et al. Circulation 2017; 136: 2406)