14th European AIDS Conference/EACS

Infection related and unrelated malignancies, HIV and the aging population

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On behalf of EuroSIDA in EuroCOORD

17th October 2013
Background

ART → Longer survival → Aging population

Malignancies
- chronic immune deficiency (Infection related)
- older age (Infection unrelated)

Future planning, treatment and prevention
Aim

To investigate the impact of aging in the HIV-positive population on the incidence of infection related and infection unrelated malignancies
Methods - EuroSIDA

EuroSIDA is a large prospective cohort with 18,791 patients from 108 clinics in 34 European countries, Israel and Argentina. Regularly collecting:

- CD4 counts, HIV viral loads
- All treatment start/stop dates
- Clinical AIDS events
- Non-AIDS events (since 2001)
- Deaths and causes of death
- Smoking status
Methods - EuroSIDA

Baseline: latest of 1 January 2001 or first visit

EuroSIDA
18,791 people

1 Jan 2001
15,648 people
95,033 PYF

Malignancy
610 people
643 cancers
Methods – Infection related malignancies

Clear infectious cause N (%)
- EBV 159 (41)
- HPV Males 81/307 (26), Females 42/81 (52)
- HHV-8 62 (16)
- *H. Pylori* 11 (3) Cervix, anus, penis, vulva, vagina, base of tongue, pharynx, tonsils
- HCV/HBV 33 (9)

Malignancy
643 cancers

IRM 338 (60%)

EuroSIDA
Methods – Infection unrelated malignancies

No clear infectious cause N (%)

- Lung cancer 55 (22)
- Prostate cancer males 28/202 (14)
- Breast cancer females 26/53 (49)
- Colon and rectal cancer 23 (9)

Malignancy 643 cancers

IURM 255 (40%)
Methods - Statistics

Annual incidence rates, stratified by age

Poisson regression

Linear exponential smoothing models (LESMs)
# Baseline Characteristics (latest of 1 January 2001 or first visit)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N/Median</th>
<th>%/IQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>15,648</td>
<td>100</td>
</tr>
<tr>
<td>Aged 51 or older</td>
<td>2,502</td>
<td>16</td>
</tr>
<tr>
<td>Prior malignancy</td>
<td>931</td>
<td>6</td>
</tr>
<tr>
<td>Male</td>
<td>11,356</td>
<td>73</td>
</tr>
<tr>
<td>White ethnicity</td>
<td>13,821</td>
<td>88</td>
</tr>
<tr>
<td><strong>Region</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Argentina</td>
<td>597</td>
<td>4</td>
</tr>
<tr>
<td>East</td>
<td>4,774</td>
<td>30</td>
</tr>
<tr>
<td>West</td>
<td>3,220</td>
<td>21</td>
</tr>
<tr>
<td>North</td>
<td>3,332</td>
<td>21</td>
</tr>
<tr>
<td>South</td>
<td>3,725</td>
<td>24</td>
</tr>
<tr>
<td><strong>Risk group</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterosexual</td>
<td>5,008</td>
<td>32</td>
</tr>
<tr>
<td>IDU</td>
<td>3,381</td>
<td>22</td>
</tr>
<tr>
<td>Homosexual</td>
<td>6,124</td>
<td>39</td>
</tr>
<tr>
<td>Current or previous smokers</td>
<td>5,454</td>
<td>35</td>
</tr>
<tr>
<td>CD4 (cells/mm)</td>
<td>410</td>
<td>265-588</td>
</tr>
<tr>
<td>HIV Viral Load (copies/ml)</td>
<td>123</td>
<td>495-200</td>
</tr>
</tbody>
</table>

**EuroSIDA**
Incidence per year (95% CI)

**Infection related malignancies**
- N: 388, PYF: 95033
- Overall IR: 4.1 (95%: 3.7 – 4.5)
  - - 4.87% per year

**Infection unrelated malignancies**
- N: 255, PYF: 95033
- Overall IR: 2.7 (95%: 2.4 – 3.0)
  - + 3.36% per year
Incidence per year by age group (95% CI)

Infection related malignancies

Infection unrelated malignancies

Incidence per 1000

Calendar year

EuroSIDA
A12 Love this slide - have you tried making the overall line pale and think and bolding up the age ones? You eye is naturallyrawn to the summary from the previous slide rather than the age ones
Amanda; 08-10-2013
Adjusted IRR: Infection related malignancies

Age group
- 16 - 30
- 31 - 40
- 41 - 50
- 51 +

Smoking
- current
- previous
- never

Year
- 1 per year
- 2 per 2-fold increase
- 3 per 10-fold increase

CD4
- 1
- 2

HIV VL
- 3

IRR (95% CI)
- Lower
- Higher

1 adjusted for age, calendar year, HIV VL, CD4 count, region, sex, prior AIDS, prior ADM, hep B, hep C, BMI, ethnicity, transmission group, treatment regimen, PI regimen. NNRTI regimen, smoking status, time spent CD4<200, time spent HIV VL >400.

EuroSIDA
Adjusted IRR: Infection unrelated malignancies

Age group
- 16 - 30
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Smoking
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- never

Year
- 1
- 2
- 3

CD4
- 1
- 2

HIV VL
- 1
- 2

1 per year,
2 per 2-fold increase
3 per 10-fold increase

4 adjusted for age, calendar year, HIV VL, CD4 count, region, sex, prior AIDS, prior ADM, hep B, hep C, BMI, ethnicity, transmission group, treatment regimen, PI regimen. NNRTI regimen, smoking status, time spent CD4<200, time spent HIV VL >400.
Forecast of incidence rate: Infection related malignancies

Infection related malignancies

IR/1000 PYFU

0 2 4 6 8 10 12

Calendar year


IR (actual)

EuroSIDA
Forecast of incidence rate:
Infection related malignancies

Oct – Dec 2012: 3.0 (95% CI: 1.5, 5.5)
Forecast of incidence rate: Infection related malignancies

Oct – Dec 2012: 3.0 (95% CI: 1.5, 5.5)

5 years forecast: 2.2 (95% CI: 1.1, 4.0)
Forecast of incidence rate: Infection related malignancies

Oct – Dec 2012: 3.0 (95% CI: 1.5, 5.5)

5 years forecast: 2.2 (95% CI: 1.1, 4.0)

10 year forecast: 1.7 (95% CI: 0.7, 3.1)

EuroSIDA
Forecast of incidence rate:
Infection unrelated malignancies

IR/1000 PYFU

Calendar year

IR (actual)

EuroSIDA
Forecast of incidence rate: Infection unrelated malignancies

IR/1000 PYFU

Calendar year

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EuroSIDA
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Infection unrelated malignancies

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5 years forecast: 3.6 (95% CI: 1.4, 7.7)
Forecast of incidence rate:
Infection unrelated malignancies

Oct – Dec 2012: 3.1 (95% CI: 1.2, 6.7)
5 years forecast: 3.6 (95% CI: 1.4, 7.7)
10 year forecast: 4.1 (95% CI: 1.6, 8.8)
### Forecast of incidence rate (95% CI)

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<td>Oct – Dec 2012</td>
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<tr>
<td>Overall</td>
<td>3.0 (1.5, 5.5)</td>
<td>2.2 (1.1, 4.0)</td>
<td>3.1 (1.2, 6.7)</td>
<td>3.6 (1.4, 7.7)</td>
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<td>BL age &gt;50</td>
<td>2.7 (0.6, 7.3)</td>
<td>1.5 (0.1, 4.7)</td>
<td>7.8 (3.4, 16.9)</td>
<td>9.1 (4.0, 19.6)</td>
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<td>MSM</td>
<td>3.6 (1.7, 6.7)</td>
<td>2.5 (1.1, 4.8)</td>
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<td>4.2 (1.9, 8.1)</td>
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<td>CD4&lt;350</td>
<td>4.6 (1.8, 9.8)</td>
<td>2.7 (0.9, 6.3)</td>
<td>3.5 (1.4, 7.7)</td>
<td>4.4 (1.84, 9.41)</td>
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<td>Current smokers</td>
<td>2.8 (0.5, 8.4)</td>
<td>2.3 (0.8, 5.0)</td>
<td>3.4 (1.4, 7.3)</td>
<td>5.8 (1.8, 15.5)</td>
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**All decreasing**
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EuroSIDA
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All increasing

EuroSIDA
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EuroSIDA
Limitations

Observational study

Follow-up from 2001

Small Counts

Forecasts

Lack of population projections

EuroSIDA
Conclusions

Infection related malignancy incidence is decreasing

Infection unrelated malignancy incidence is stable.

Older age is associated with infection related and unrelated cancers.

Aging population will lead to increasing proportion of infection unrelated malignancies.

Targeted preventive measures and studies evaluating the cost-benefit of screening should be considered.
The EuroSIDA Study Group

The multi-centre study group of EuroSIDA (national coordinators in parenthesis).

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Additional voting members: J Lundgren, A Phillips, P Reiss


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