Screening Mammograms in Women 40-50 Years Old: DANGEROUS!!

Stephen Sharp, MD
October 17th, 2011
PGY II
Overview

- Epidemiology
- Current Screening Recommendations
- Screening between 40-50 years of age
  - Why it is Ineffective
  - Why it is Dangerous
- Conclusions
Epidemiology

- Median age at diagnosis is 61 years.
- Per 100K women: Caucasian 127, African-American 120, Asian 94, American-Indian 78, Hispanic 78
- Most frequently diagnosed non-cutaneous cancer among women in the U.S.
- 2nd leading cause of cancer death among women in the U.S.
- 2008: 180,000 of invasive and 67,000 non-invasive cases of breast cancer
- 2008: 40,500 deaths
- Probability of developing in 40’s: 1 in 69

Mammography Stats

- Sensitivity: 77%-95%
- Specificity: 94%-97%
- Rate of false positives: ~10%, and this is higher in younger women
5 year survival rates

<table>
<thead>
<tr>
<th>Site</th>
<th>‘74-’76</th>
<th>‘83-’85</th>
<th>‘95-’01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast</td>
<td>75</td>
<td>78</td>
<td>88</td>
</tr>
</tbody>
</table>
Assumptions of Screening Theory

- Increased detection of early cancer leading to fall in incidence of late cancer
- More in situ disease and less invasive disease
- Fewer node-positive cases and more node-negative cases lower mortality
Screening Biases

- Lead time bias-prolongs period of observation
- Length bias-screening good at detecting non-aggressive cancers
- Attendance bias-class effect
Data in 40-50 age range

- **Age Trial**
- **160,921 women, 39-41 from 1991-1997.**
- Randomly assigned to annual screening vs. usual care (screening starting at age 50)
- Followed for 10 years
- Relative risk for breast cancer specific mortality 0.83
- **NO EFFECT ON ALL CAUSE MORTALITY**

Lead Time Bias

- Age 55: Diagnosis → Death (Worse Survival)
- Age 45: Diagnosis → Death (Better Survival)
Framing the result

- 25% relative risk reduction in cause specific death
- Number needed to screen to prevent one cancer death: 2,500 over 10 years

Risks of Screening

- “All screening programmes do harm; some can do good as well.” – Muir Gray, director, UK Cancer Screening Programme
- False alarms
- Over-diagnosis
- Unnecessary surgery
- Increase in mastectomy rate
Costs of Screening

2,000 Women

- 20 have cancer
  - 17 would be spotted and treated successfully without screening, or would die despite treatment, or would die from something else
  - 2 missed
  - 1 life saved by screening
- 1980 don’t have cancer
  - 198 positive
  - 1,782 negative
  - 188 cleared by further testing, biopsy etc.
  - 10 treated unnecessarily

http://news.bbc.co.uk/2/hi/uk_news/magazine/7910011.stm
Costs of Screening

- 30 million women aged 40-50
- Over 10 years screening would save ~15,700 lives
- Average cost of mammogram (averaging insured and uninsured): $100
- Cost of treating false positive: $525
- False positives treated unnecessarily: ~ $20,000

10 year cost of screening, brought to you by Mastercard

- Screening alone: $30,000,000,000
- 3 million false positives: $1,575,000,000
- 150,000 go on to receive further unnecessary treatment: $3,000,000,000
- Total cost: $3.4 BILLION PER YEAR!! NOT PRICELESS!!
- THIS IS UNSUSTAINABLE AND IS A DIRECT THREAT GOING TO OUR HEALTH CARE SYSTEM!
$2.2 million dollars over 10 years to save one woman’s life
Can we sustain this? Shouldn’t we be putting our money into better research?
Newer and better treatments instead of more screening
Smarter screening such as risk calculators, individualized provider-patient counseling
References

- http://news.bbc.co.uk/2/hi/uk_news/magazine/7910011.stm