CLINICAL-PATHOLOGICAL INDICATORS OF AN OPPORTUNISTIC BREAST CANCER SCREENING: A POPULATION-BASED STUDY

Bordoni A, Probst-Hensch NM, Mazzucchelli L, Spitale A

Registro Tumori Canton Ticino
Istituto Cantonale di Patologia

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• In case of breast cancer it is essential to promote secondary prevention, aimed at maximising the detection of small-diameter invasive cancers

Coverage of organized screening programmes in Europe

In Switzerland there is a co-existence of systematic screening programmes and opportunistic screening strategies

• Although data coming from organized screening programmes are several, little is known about the performance of opportunistic screening and comprehensive population-based studies are still lacking
BACKGROUND (II)

5-year Relative SURVIVAL in Ticino and Switzerland (the EUROCARE IV Study)

- Switzerland: 82
- Geneva: 85.1
- Ticino: 80.8
- Vallis: 80.3
- Graubünden-Glarus: 79.4
- St. Gallen-Appenzell: 77.4
AIMS OF THE STUDY

• To assess specific indicators at the diagnosis, which are independent of applied therapeutic treatments and reported in the *European Guidelines for Quality Assurance for Breast Cancer Screening*

• To compare our data with those coming from populations where a programmed screening strategy is implemented
METHODS

• Case-selection: patients with primary ductal carcinoma in-situ (DCIS) or invasive breast cancers diagnosed between 1996 and 2007, selected by Ticino Cancer Registry

• Essential information (tumour diameter, AJCC stage, histological grade), abstracted from pathology reports coming from the same core group of pathologists, thus ensuring the reproducibility of results

• Analysis according to tumour behaviour and time-period

• World age-standardized incidence rates (per 100,000)

• Time trends analysis and Annual Percentage Change (APC) performed through the Joinpoint regression model
WHICH POPULATION IS OBSERVED BY A CANCER REGISTRY?

Patients (regardless of age) with breast cancers recorded and followed-up by Cancer Registries: 100%

Patients (50-69 years) with breast cancers diagnosed within a mammography screening: 60-80%

Tumour diagnosis performed through a screening programme
INCIDENCE
Ticino, 1996-2007

3047 incident breast cancer cases:
• 187 DCIS (mean age: 60.4)
• 2860 invasive (mean age: 63.0)
TREND OF INCIDENCE ACCORDING TO STAGE AT DIAGNOSIS
Ticino, 1996-2007

APC (stage I): 1.2; 95%CI: -1.3; 3.6
APC (stage II): -1.3; 95%CI: -3.6; 1.1
APC (stage III): 0.6; 95%CI: -5.5; 7.1
APC (stage 0): 7.8; 95%CI: -1.5; 18.0
APC (stage IV): -1.2; 95%CI: -7.1; 5.1
TREND OF TUMOUR DIAMETER INVASIVE CASES Ticino, 1996-2007

All ages

Year of diagnosis

Mean tumor size  Median tumor size

Age group 50-69 years

Year of diagnosis

Mean tumor size  Median tumor size

APC: -1.3; 95%CI: -2.1; -0.5

APC: -1.5; 95%CI: -2.5; -0.4

APC: -2.1; 95%CI: -3.1; -1.1

APC: -2.5; 95%CI: -3.9; -1.1
INVASIVE CASES ACCORDING TO TUMOUR DIAMETER CLASS

All ages

50-69 years

p = 0.0441

p = 0.1821
% TUMOURS ACCORDING TO THE HISTOLOGICAL GRADE
## COMPARISONS WITH OTHER POPULATION-BASED STUDIES

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Screening Programme Guidelines</th>
<th>Ticino (south of Switzerland), 1996-2007</th>
<th>Other population-based studies ^</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of in-situ cancers</td>
<td>NA</td>
<td>6.1%</td>
<td>7.4% and 10% in the Netherlands 1, 2</td>
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<td>13% and 15% in US 3, 4</td>
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<tr>
<td>Proportion of in-situ cancers (50-69 years)</td>
<td>10-20%</td>
<td>8.4%</td>
<td>11.6% in the Netherlands 1, 2</td>
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<td>12.3% in Geneva 5, 6</td>
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<td></td>
<td>12.5% in Vaud 5, 6</td>
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<tr>
<td>Proportion of invasive cancers with tumour size ≤10 mm (50-69 years)</td>
<td>≥25-30%</td>
<td>18.2%*</td>
<td>26.1% in Geneva 5, 6</td>
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<td>30.1% in Vaud 5, 6</td>
</tr>
<tr>
<td>Proportion of invasive cancers with tumour size ≤20 mm (50-69 years)</td>
<td>NA</td>
<td>63.5%*</td>
<td>70.4% in Geneva 5, 6</td>
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<td></td>
<td></td>
<td></td>
<td>70.1% in Vaud 5, 6</td>
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<tr>
<td>Median tumour size for invasive cancers (mm)</td>
<td>NA</td>
<td>20mm</td>
<td>15mm in Rhode Island 3</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>15mm in Denmark 5, 6</td>
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<tr>
<td>Mean tumour size for invasive cancers (mm)</td>
<td>NA</td>
<td>22mm</td>
<td>20mm in Rhode Island 3</td>
</tr>
<tr>
<td>Proportion of invasive cancers with negative lymph node</td>
<td>&gt;70-75%</td>
<td>60%</td>
<td>53.7% in Denmark 7</td>
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<td>43.3% in Denmark 7</td>
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<td></td>
<td>64.7% in Rhode Island 3</td>
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<tr>
<td>Proportion of invasive tumours with Stage I</td>
<td>NA</td>
<td>40.2%</td>
<td>43% in Denmark 7, 7</td>
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<td></td>
<td>100% in Denmark 7, 7</td>
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<td></td>
<td></td>
<td>53.5% in Rhode Island 3</td>
</tr>
<tr>
<td>Proportion of invasive tumours with Stage II+</td>
<td>&lt;25-30%</td>
<td>59.8%</td>
<td>57% in the Netherlands 1</td>
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<td>46.5% in Rhode Island 3</td>
</tr>
</tbody>
</table>

NA: not available; * data for the period 2000-2005, with the aim of being comparable with other Swiss data (i.e. Geneva and Vaud)

^ all results come from Regions where an organized screening programme is implemented, with the exception of those reported in italics, resulting from opportunistic screening.

1 (Louwman et al, 2008); 2 (van Steenbergen et al, 2008); 3 (Coburn et al, 2004); 4 (Malmgren et al, 2008); 5 (Bulliard et al, 2009); 6 (Schopper & de Wolf, 2007); 7 (Jensen et al, 2008)
CONCLUSION

• Important improvements in prognostic features (such as tumour diameter, % of DCIS, stage and grade shifting) have been observed over the study period

• But still less favourable than those achieved where organized screening programmes are implemented
Assessment of breast cancer opportunistic screening by clinical-pathological indicators: a population-based study

A Bordoni¹, N M Probst-Hensch², L Mazzucchelli³ and A Spitali¹

¹Ticino Cancer Registry, Institute of Pathology, Via in Selva 24, Locarno CH-6600, Switzerland
²Department of Chronic Disease Epidemiology/NICER, ISPM Zurich, University of Zurich, Sumatrastrasse 30, Zurich CH-8006, Switzerland
³Institute of Pathology, Via in Selva 24, Locarno CH-6600, Switzerland

Correspondence: Dr A Bordoni, E-mail: andrea.bordoni@ti.ch

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