Local recurrence of ductal carcinoma in situ after conservative breast surgery: mammographic appearance

M El Khoury (1, 2), B Mesurolle (2), P Cherel (1), JM Guinebretière (3), MM Plantet (1), C de Maulmont (1) and C Hagay (1)

Abstract
Objective. To review the mammographic features of local recurrences of DCIS treated conservatively.

Materials and methods. Thirty-five patients treated conservatively for a DCIS have presented subsequently a local recurrence. Three patients had double metachronous and one a bi-focal recurrence. The mammographic appearances of these 39 recurrences were analyzed retrospectively and compared to initial mammograms.

Results. Median delay to recurrence was of 47 months (interval 8-240 months). Two-thirds of the recurrent lesions were similar to the initial presentation, of which 90% occurred at the lumpectomy site. In 18/35 cases (51%), an intra-ductal component was found at histological diagnosis and among these 11/18 (61%) were strictly intra-ductal.

Conclusion. Local recurrences of DCIS are proteiform. However, the majority of which, occurring at the lumpectomy site were similar to the primary tumor, raising again the hypothesis of incomplete eradication even when the margins were considered free.

Keywords: Ductal carcinoma in situ. Conservative treatment. Recurrence. Mammographic appearance.

Materials and methods
Between 1971 and 2000, 587 patients were treated conservatively for a DCIS at the René Huguenin Center in Saint Cloud, France. Forty-four of them presented a local recurrence. Nine were excluded from the study because of an initial suspicion of microinvasion. Of the 35 remaining patients, three presented a second metachronous recurrence after two conservative treatments and one presented a bifocal recurrence, for a total of 39 local recurrences. Mammographies at the time of recurrence were studied retrospectively by a radiologist and compared to the images from the initial diagnosis. The histological and clinical aspects were

Screening campaigns are detecting breast carcinomas earlier and earlier, most often at the in-situ stage. Consequently, ductal carcinomas in situ (DCIS) account for 15%-20% of all breast cancers and 25%-56% of subclinical breast cancers detected by mammography (2, 4). Most patients can be treated conservatively, but a certain number experience recurrence. The clinical and histopathological characteristics that may predict the risk of recurrence are not perfectly known (3). Recurrences are heterogeneous, either invasive or intraductal. High-grade lesions that are initially palpable are at a high risk of invasive recurrence. Five years after conservative treatment, this risk is estimated at 11.6% for lesions that are initially palpables and only 6.6% for those discovered by mammography, and 11.8% for high-grade lesions compared to 4.8% for low-grade lesions (3). Other factors have also been implicated such as excision margins, size of the initial lesion, histological subtype, and the patient’s age. We therefore decided to conduct a retrospective study of the mammographic aspect of DCIS cases recurring after conservative treatment.
based on the information noted in the medical records, with the patients followed up annually by mammography and clinical examination. None of the patients had immediate postoperative mammography, particularly in the cases with initial microcalcifications.

Results

The median age of the patients at the time of initial diagnosis was 53 years (range, 34-77 years). At initial diagnosis, 12 of the 35 patients (35%) presented a clinical anomaly: three out of 12 (25%) had nipple discharge with no mammographic anomaly and nine out of 12 (75%) a palpable mass. Five of the nine patients with a palpable mass (55%) presented an isolated mass on mammography and four out of nine (45%) presented a mass associated with microcalcifications. Twenty-three of the 35 patients (65%) presented a subclinical lesion discovered on mammography: 21 of 23 (92%) microcalcifications, one of 23 (4%) an asymmetry with focal density alone, or associated with microcalcifications in one of 35 (4%).

The histological type of the initial ductal carcinoma in situ was found in the medical records for 13 patients, four of which were comedocarcinomas and nine non-comedocarcinomas. The grade was low in two cases, intermediate in seven cases, and high in four cases. The frequency of local recurrence was 6% (35/587) with a median onset of 47 months (range, 8-240 months). Excision margins at the very beginning were not measured, since a few decades ago staining of the tumorectomy pieces was not in use; however, the margins were deemed healthy in 25 of 35 cases (71%) and in contact with the tumor in 10 of 35 cases (29%). Seven out of ten cases (70%) required reoperation and three out of ten (30%) additional curietherapy.

Nineteen out of 39 recurrences (49%) were discovered clinically, 18 (95%) as a palpable mass (fig. 1), and one out of 19 (5%) as inflammation. Twenty of the 39 recurrences (51%) were subclinical: microcalcifications in 15 of 20 cases (75%) (fig. 2), focal density with asymmetry alone in three out of 20 cases (15%), or associated with microcalcifications in two out of 20 cases (10%). In terms of their histological type, 25 of them (64%) contained an intraductal component: 13 of 25 (52%) had a strictly intraductal component, four of 25 (16%) an intraductal component and a microinvasive focus, seven of 25 (28%) two components, intraductal and invasive, and one of 25 (4%) intraductal and lobular in situ. Twelve of the 39 recurrences (30%) were purely invasive ductal, one out of 39 (3%) invasive lobular and in situ, and one of 39 (3%) inflammatory.

Eleven of the 13 strict intraductal recurrences (85%) were revealed by microcalcifications and ten of the 12 pure infiltrating ductal recurrences (84%) presented as masses. Comparing the mammographic aspect of the recurrences with that of the initial lesions, while eliminating the three patients who initially presented nipple discharge without initial mammographic anomaly, 22 of the 35 recurrences (63%) were similar to the primary lesions and 20 of the 22 recurrences (90%) were found at the tumorectomy site (table I). The 22 recurrences of 35 primary lesions, initially presenting as microcalcifications, contained microcalcifications in 14 of 22 cases (64%). Of 22 initial lesions presenting as microcalcifications, 14 (64%) contained microcalcifications and seven recurrences of the 11 (63%) initially palpable lesions were palpable (table II). Of the 27 out of 35 recurrences found at the tumorectomy site, 18 of the 27 (66%) contained an intraductal component (table III).

Discussion

DCIS is a malignant proliferation of ductal epithelial cells contained within the basal membrane, with no evidence of conjunctive tissue invasion. With wider
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Table I
Location of the recurrence correlated with the mammographic features.

<table>
<thead>
<tr>
<th>Mammographic aspect</th>
<th>Recurrence site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recurrence vs primary</td>
<td>Tumorectomy site</td>
</tr>
<tr>
<td>Comparable (n=22) 63%</td>
<td>20 (90%)</td>
</tr>
<tr>
<td>Different (n=13) 37%</td>
<td>7 (54%)</td>
</tr>
</tbody>
</table>

Table II
Comparison of the presentation of the recurrence with that of the primary lesion.

<table>
<thead>
<tr>
<th>Primary tumor</th>
<th>Tumor recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palpable mass</td>
<td>Microcalcifications</td>
</tr>
<tr>
<td>Micros (n=22) 63%</td>
<td>8 (36%)</td>
</tr>
<tr>
<td>FDA* not palpable (n=1) 3%</td>
<td>0</td>
</tr>
<tr>
<td>FDA* not palpable + microcalcifications (n=1) 3%</td>
<td>0</td>
</tr>
<tr>
<td>Palpable mass (n=11) 31%</td>
<td>7 (63%)</td>
</tr>
</tbody>
</table>

*FDA: Focal density with asymmetry.
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Table III  
Location of the recurrence in correlation with the histological diagnosis.  
Tableau III  
Site de la récidive selon le diagnostic histologique.

<table>
<thead>
<tr>
<th>Histological type of recurrence</th>
<th>Tumorectomy site n=27</th>
<th>Elsewhere n=8</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDC (n=13) 38%</td>
<td>11 (85%)</td>
<td>2 (15%)</td>
</tr>
<tr>
<td>IDC/M (n=12) 34%</td>
<td>8 (66%)</td>
<td>4 (34%)</td>
</tr>
<tr>
<td>IDC &amp; IDC/M (n=4) 11%</td>
<td>4 (100%)</td>
<td>0</td>
</tr>
<tr>
<td>IDC &amp; invasion (n=3) 8%</td>
<td>2 (66%)</td>
<td>1 (34%)</td>
</tr>
<tr>
<td>IDC &amp; LCIS (n=1) 3%</td>
<td>1 (100%)</td>
<td>0</td>
</tr>
<tr>
<td>ILC &amp; LCIS (n=1) 3%</td>
<td>1 (100%)</td>
<td>0</td>
</tr>
<tr>
<td>Inflammatory (n=1) 3%</td>
<td>0</td>
<td>1 (100%)</td>
</tr>
</tbody>
</table>

LCIS lobular carcinoma in situ, IDC invasive ductal carcinoma, IDC/M invasive ductal carcinoma with microcalcifications, ILC invasive lobular carcinoma.

Conclusion

DCIS is a highly heterogeneous disease whose progression remains insufficiently clear. This is confirmed by the heterogeneity of local recurrences of the disease. However, in our study, the majority of the recurrences found at the tumorectomy site resembled the primary lesions, suggesting the hypothesis of incomplete eradication of the initial lesions. Mammography plays a vital role in estimating the extent of the primary lesions and therefore in the evaluation and feasibility of conservative treatment, in the confirmation of complete excision, and particularly in post-treatment monitoring. It can thus detect a local evolutive resumption early so as to provide catch-up treatment as early as possible. Any recently appearing mammographic abnormality, particularly at the tumorectomy site but also remotely, should be assessed, thus reducing the rate of recurrences detected at an advanced stage so as to improve prognosis.

References


