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The frequency of presentation and clinico-pathological characteristics of symptomatic versus screen detected ductal carcinoma in situ of the breast

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Abstract

Introduction: DCIS accounts for 20% of screen-detected breast cancers, but also presents symptomatically. Historically, approximately 5% of DCIS was thought to be symptomatic, but accurate evaluation of the presentation of symptomatic DCIS is needed to determine its incidence and tumour biology.

Methods: Clinico-pathological details of a consecutive series of patients presenting to a single breast-unit, with a pre-operative diagnosis of DCIS, were selected. Data included age, mode of presentation, pre-operative clinical and radiographical findings. The final tumour histology, operation, size, grade, ER status (and HER2 expression in invasive cases) were recorded.

Results: 375 patients had a pre-operative histological diagnosis of DCIS. 308 (82%) screen-detected (median age 59), 67 (18%) presented via symptomatic clinics (median age 50). At final histology 286 (74%) were pure DCIS, and 67 (23%) had an invasive focus. 43% (29/67) of symptomatic cases had an invasive focus at final histology versus 19% (60/308) screen-detected ($p \leq 0.001$). 31% (9/29) of symptomatic, versus 10% (6/60) of screen-detected cases with invasion were node positive ($p = 0.05$). 45% (28/62) intermediate/high-grade symptomatic cases had an invasive focus at final histology, compared to 19% (57/297) intermediate/high-grade screen-detected cases. 86% (212/248) screen-detected pure DCIS was ER positive compared to 68% (26/38) symptomatically presenting pure DCIS ($p \leq 0.001$). Overall, 13% (38/248) pure DCIS presented symptomatically ($p = 0.001$).

Conclusions: Overall, thirteen percent of pure DCIS present symptomatically. Nearly half of symptomatically presenting DCIS at core biopsy has an occult invasive focus and is more frequently ER negative. Symptomatic DCIS with an invasive focus is more likely to have lymph node involvement.

Keywords: Breast; Cancer; DCIS; In situ; Screening; Symptomatic

Introduction

Ductal carcinoma in Situ (DCIS) accounts for 20% of all screen-detected breast cancers, but it has been estimated that only 5% of DCIS in the UK presents symptomatically.[1] With recent debate as to the potential "overdiagnosis" and more importantly "overtreatment" of screen-detected DCIS, it is important to clarify the proportion of DCIS that presents symptomatically and determine whether the clinico-pathological features of symptomatic DCIS differs from that detected at breast screening assessment by mammography. In addition, it is important to understand whether there are differences in steroid receptor status, invasive foci or lymph node involvement at final histology.

Symptomatic invasive breast cancer often has a poorer overall prognosis than screen-detected, it is therefore important to identify whether symptomatic DCIS has a poorer prognosis than screen-detected DCIS or whether

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they are clinico-pathololologically similar. Although a pre-operative diagnosis of invasive disease is ideal, sometimes, despite repeat biopsy, this is not always possible and the invasive focus only becomes apparent at final histology. Therefore identification of patients with a high chance of harbouring an occult invasive focus (and who could be counselled accordingly) is crucial. At meta-analysis, of (mainly screening-detected cases) of DCIS at pre-operative needle biopsy,[2] factors associated with underestimation of associated invasive disease included high-grade disease, lesions larger than 20 mm on imaging, Breast Imaging Reporting and Data System (BI-RADS) score of 4 or 5, a mass seen on mammogram versus calcification alone, and the presence of a palpable lesion in the breast.[2]

When looking at screen-detected versus symptomatic DCIS, sonographic (USS) and mammographic differences have previously been demonstrated. At both USS and mammography the presence of a mass is more common in symptomatic compared to asymptomatic patients.[3,4] Whereas, microcalcifications and posterior shadowing are more frequently found in the screen-detected cases.[3,4]

This study looks at a consecutive series of patients presenting to a single UK breast unit, with a pre-operative diagnosis of DCIS. This is important, as it would reflect cases seen in real practice. We compared the pre-operative findings both clinically and on imaging, to the final histology and tumour characteristics, highlighting differences between screen-detected and symptomatically presenting disease. We aimed to determine if the mode of presentation of DCIS or pre-operative clinico-pathological factors could predict the presence of invasion or lymph node involvement and whether steroid receptor status differed between the groups.

Methods

Clinico-pathological details of all patients presenting to a single NHS breast unit (both NHS breast screening and symptomatic patients) with a pre-operative histological diagnosis of DCIS were collected. Data included age at presentation, mode of presentation, and both pre-operative clinical and radiographical findings. The final, post-operative, histology was also documented. This detailed the type of operation, whether there was invasion or microinvasion present, the size, grade and oestrogen receptor (ER) status of the lesions, the HER2 status if invasive foci were found at final histology and the results of any sentinel node biopsy.

Histo-pathological findings were assessed using a light microscope. Tumour grade was categorised as per the NHS breast screening programme guidelines.[5] ER status was assessed using the Quick-Score out of a maximum of eight (staining method as previously described).[6] HER2 status was scored 0 to three (as previously described[6]) by pathologists working in a reference laboratory. Scores of 0 and 1+ were taken as negative, scores of 3+ as positive. Scores of 2+ were subjected to Fluorescent In Situ Hybridisation (FISH) analysis and only counted as positive if an amplified signal was present. Microinvasion was defined as foci of invasive disease of 1 mm or less.[5]

Statistical analysis was performed using SPSS version 20, with a significance level of 5% throughout.

Results

Three hundred and seventy-five patients with a pre-operative histological diagnosis of DCIS presented to our unit between July 2007 and December 2011. Three hundred and eight patients (82%) presented via the NHS breast-screening programme and sixty-seven patients (18%) presented via symptomatic clinics. The diagnosis of DCIS was made at pre-operative core biopsy in 327 patients (87%), twenty-one patients (5%) had a Vacuum Assisted biopsy, 26 patients (7%) had an excision-biopsy or total duct excision, and 1 patient had a punch biopsy (0.2%).

General patient characteristics

The median age of patients in the cohort was 58 years (Interquartile range (IQR) 61–65). Fifty-nine years [IQR52–64] for the screening patients and 50 years [IQR43–68] for the symptomatic patients ($p = 0.07$).

The majority, 83% (254/308), of the screen-detected cases were identified by the presence of suspicious microcalcifications on mammography (as assessed by the breast-screening radiologists). The other mammographic findings are shown in Table 1. Of the patients presenting symptomatically 46 (70%) presented with a lump, 5 (8%) with Paget's disease of the nipple, 3 (5%) with nipple discharge – and the final diagnosis made after duct excision. Nine (14%) cases of DCIS were detected at symptomatic mammograms for a completely separate benign presenting complaint. One (2%) patient presented with

Table 1
Mammographic findings in symptomatic and screen-detected cases.

	Symptomatic		Screening	
	DCIS	Invasive	DCIS	Invasive
Mass	6 (10%)		10 (3%)	
	1 (3%)	5 (17%)	6 (2%)	4 (7%)
Mass and microcalcifications	10 (16%)		13 (4%)	
	3 (8%)	7 (24%)	8 (3%)	4 (7%)
Microcalcifications	33 (52%)		254 (83%)	
	21 (55%)	11 (38%)	212 (85%)	44 (73%)
Distortion	0		5 (2%)	
	0	0	3 (1%)	2 (3%)
Distortion and microcalcifications	3 (5%)		6 (2%)	
	1 (5%)	0	4 (2%)	4 (3%)
Density	4 (6%)		6 (2%)	
	3 (8%)	1 (3%)	4 (2%)	1 (2%)
Density and microcalcifications	4 (6%)		10 (3%)	
	2 (5%)	1 (3%)	8 (3%)	2 (3%)
Stellate lesion	0		1 (0.3%)	
			1 (0.4%)	0
None	3 (5%)		3 (1%)	
	2 (5%)	1 (3%)	2 (1%)	1 (1%)