

Accuracy of classification of invasive lobular carcinoma on needle core biopsy of the breast

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ABSTRACT

Although the UK National Institute for Health and Care Excellence guidelines recommend that in patients with biopsy-proven invasive lobular carcinoma (ILC), preoperative MRI scan is considered, the accuracy of diagnosis of ILC in core biopsy of the breast has not been previously investigated. Eleven pathology laboratories from the UK and Ireland submitted data on 1112 cases interpreted as showing features of ILC, or mixed ILC and IDC/no special type (NST)/other tumour type, on needle core biopsy through retrieval of histology reports. Of the total 1112 cases, 844 were shown to be pure ILC on surgical excision, 154 were mixed ILC plus another type (invariably ductal/NST) and 113 were shown to be ductal/NST. Of those lesions categorised as pure ILC on core, 93% had an element of ILC correctly identified in the core biopsy sample and could be considered concordant. Of cores diagnosed as mixed ILC plus another type on core, complete agreement between core and excision was 46%, with 27% cases of pure ILC, whilst 26% non-concordant. These data indicate that there is not a large excess of expensive MRIs being performed as a result of miscategorisation histologically.

MATERIAL AND METHODS

Eleven pathology laboratories from the UK and Ireland submitted data to investigate the concordance between core biopsies with a preoperative diagnosis of ILC (either pure or mixed with another subtype) with the subsequent surgical excision specimens. These were retrieved from each of the department records through a search of the local pathology computer systems, either through text or SNOMED searches (depending on the unit) for ILC diagnosed on needle core. Although an excel spreadsheet was provided to be completed, some units provided the raw data in this format, while others provided the data in collated table format. Those patients who had had preoperative systemic treatment were excluded. Data on the size of the core biopsy needle for sampling were not collected. The audit period included cases from 2005 to 2011.

All forms of ILC were included (classical, alveolar, tubulolobular, solid, pleomorphic or lobular mixed). A tumour is regarded as being of mixed type, for example, ILC and ductal/no special type (IDC/NST), if unequivocal separate areas of both morphological types are present and not if the lesion shows indeterminate features. Aberrant (absent or weak) E-cadherin staining is not a requirement for diagnosis of ILC, and UK guidelines recommend that E-cadherin should not be used to reclassify a tumour considered to be a typical ILC on H&E stained sections.⁴ For this reason, data on E-cadherin use were not collated, although some units do use this immunomarker in some selected cases, others more routinely and a few pathologists in a very limited way, according to personal preference. The aim of this audit was not to assess the value of this assay.

RESULTS

In total, 1112 cases were submitted as showing features of ILC or mixed ILC and IDC/NST/other tumour types on needle core biopsy (range in case numbers was 32–257 for the 11 units; average 101 cases per unit). Overall, of the 1112 cases, 928 were classified as pure ILC (83%) and 184 (17%) as mixed ILC with another type on core biopsy. Of the total 1112 cases, 844 were shown to be pure ILC on surgical excision, 154 were mixed ILC+ another type (invariably IDC/NST) and 113 were incorrectly categorised, and on excision were shown to be IDC/NST (table 1).

Of those lesions categorised as pure ILC on core, 86% were indeed pure ILC on excision, 7% had a

INTRODUCTION

Defining histological subtype of invasive breast cancer on needle core biopsies informs the subsequent radiological and clinical management of patients. Specifically, the National Institute for Health and Care Excellence's (NICE) guidelines, 'Early and locally advanced breast cancer: diagnosis and treatment' [CG80], recommend that in patients with biopsy-proven invasive lobular carcinoma (ILC), preoperative MRI scan is considered (guidance.nice.org.uk/cg80). This recommendation reflects both the increased sensitivity of MRI, compared with mammography and ultrasound, in accurately assessing the size of the tumour and identifying multiple invasive foci, particularly if the patient has dense breasts, as well as the biology of the ILC itself.^{1 2} Thus, accurate core biopsy assessment is clinically important to ensure that patients receive appropriate preoperative assessment and resources are targeted correctly. There is, however, very limited data on the accuracy of classification of ILC in core biopsy specimens;¹ one study, for example, records that of 500 carcinomas diagnosed on needle core biopsy, there were 21 tumours diagnosed as ILC, of which 18 were diagnosed as the same type in the surgical excision.³

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Short report

Table 1 Distribution of cases diagnosed as pure ILC or mixed ILC with another type on needle core biopsy by the 11 separate units

Unit	Core diagnosis of ILC				Core diagnosis of ILC+other type				Total cases per unit	Cases with complete agreement (%)*
	Excision diagnosis pure ILC	Excision diagnosis ILC +other type	Excision diagnosis IDC/NST	Total	Excision diagnosis pure ILC	Excision diagnosis ILC +other type	Excision diagnosis IDC/NST	Total		
1	57 (75%)	3 (4%)	16 (21%)	76	2 (100%)	0 (0%)	0 (0%)	2	78	73
2	33 (87%)	4 (11%)	1 (3%)	38	0 (0%)	5 (71%)	2 (29%)	7	45	84
3	81 (98%)	2 (2%)	0 (0%)	83	7 (54%)	4 (31%)	2 (15%)	13	96	89
4	78 (95%)	3 (4%)	1 (1%)	82	2 (14%)	8 (57%)	4 (29%)	14	96	90
5	92 (93%)	5 (5%)	2 (2%)	99	3 (38%)	4 (50%)	1 (13%)	8	107	90
6	86 (94%)	4 (4%)	1 (1%)	91	0 (0%)	0 (0%)	0 (0%)	0	91	95
7	52 (91%)	4 (7%)	1 (2%)	57	8 (36%)	9 (41%)	5 (23%)	22	79	77
8	29 (97%)	1 (3%)	0 (0%)	30	0 (0%)	2 (100%)	0 (0%)	2	32	97
9	52 (91%)	0 (0%)	5 (9%)	57	0 (0%)	2 (40%)	3 (60%)	5	62	87
10	99 (74%)	14 (11%)	20 (15%)	133	5 (14%)	19 (53%)	12 (33%)	36	169	70
11	135 (74%)	29 (16%)	18 (10%)	182	23 (31%)	32 (43%)	20 (27%)	75	257	65
Total	794 (86%)	69 (7%)	65 (7%)	928	50 (27%)	85 (46%)	48 (26%)	184	1112	79

*Complete agreement here includes only those cases with absolute agreement, that is, cases categorised as pure ILC on both needle core biopsy and surgical excision and those classified as mixed ILC with another type on both histological samples.
IDC/NST, invasive ductal carcinoma/no special type; ILC, invasive lobular carcinoma.

previously unrecognised, non-lobular component in addition to the ILC on excision and 7% were pure IDC/NST. In essence, therefore, 93% of these had an element of ILC correctly identified in the core biopsy sample and could be considered concordant. Of cores diagnosed as mixed ILC with another type on core, complete agreement between core and excision (ie, both bearing ILC+another type) was 46%, with 27% cases of pure ILC, whilst 26% were IDC/NST in the surgical specimen. Thus, agreement in lesions interpreted on core biopsy as ILC mixed with another component was lower than those diagnosed as pure ILC on core (although 73% had a lobular element present in the former compared with 93% in the latter).

Concordance also varied by laboratory from 65% to 97% for specimens with complete agreement between core and excision (ie, core and excision—both pure ILC, or core and excision—both mixed ILC and another type).

DISCUSSION

The aim of this study was not to explore the reproducibility of the diagnosis and classification of ILC, but to address the histology outcome for patients classified as having ILC on needle core biopsy, irrespective of the depth of investigation. These patients will potentially have an expensive MRI on the basis of the histological diagnosis. For this reason, we did not address the issue of number of 'missed' ILC on core biopsy. However, one unit found that of 119 carcinomas categorised as classical ILC in the excision specimen, 101 (84%) were called ILC in the core and 10 (8%) were called mixed ILC and other type(s) in the core, suggesting that there are not large numbers of patients who are potentially missing the opportunity to benefit from preoperative MRI breast imaging.

While the agreement in lesions interpreted on core biopsy as ILC mixed with another component was lower (73%) than those diagnosed as pure ILC on core (93%), the implications for the use of preoperative breast MRI in this former group of women is less clear. Indeed, of the 11 centres submitting data, varying policies of preoperative MRI in the group of patients with a core biopsy diagnosis of mixed ILC and another type are applied, and this warrants further consideration.

Finally, although concordance varied by laboratory from 65% to 97% for specimens with complete agreement between core and excision (ie, core and excision—both pure ILC, or core and excision—both mixed ILC plus another type), the aim of the present audit was to examine routine practice in these UK and Ireland laboratories. There was no major difference in concordance between centres where cases were reported by monospecialists and those where reporting was undertaken by more generalists. It is also impossible to assess if immunohistochemical (IHC) staining for E-cadherin contributed to the small variations in concordance seen, since both centres that more routinely stain for E-cadherin on all biopsies suspicious of ILC and centres that use IHC only in specific cases showed similarly high agreement.

In conclusion, we have shown that 86% of cases of pure ILC are correctly categorised on core biopsy samples, with another 7% having an unequivocal lobular component to their carcinomas (93% of total). These data indicate that there is not a large excess of expensive MRIs being performed as a result of histological categorisation.

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