

## Objective

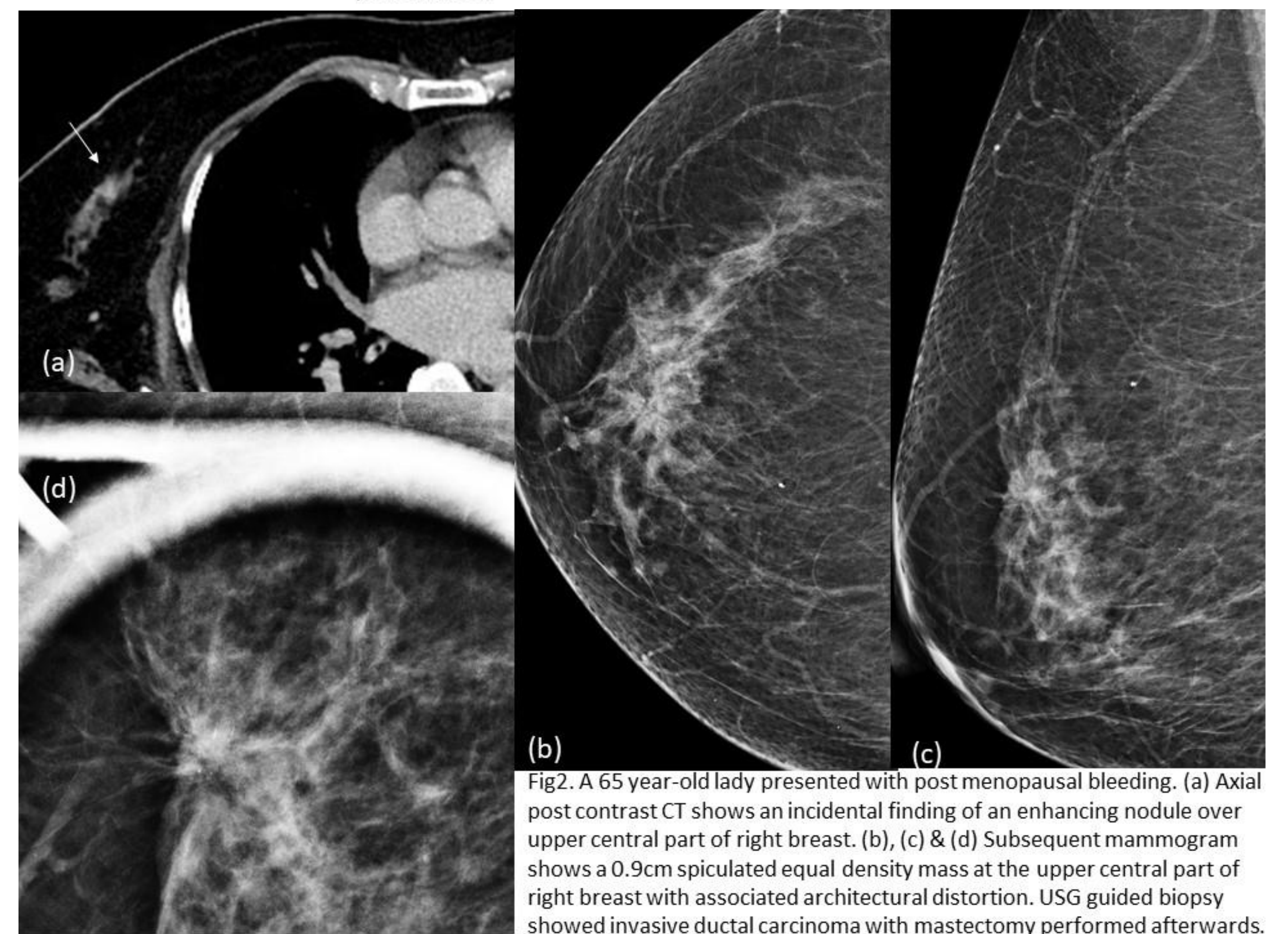
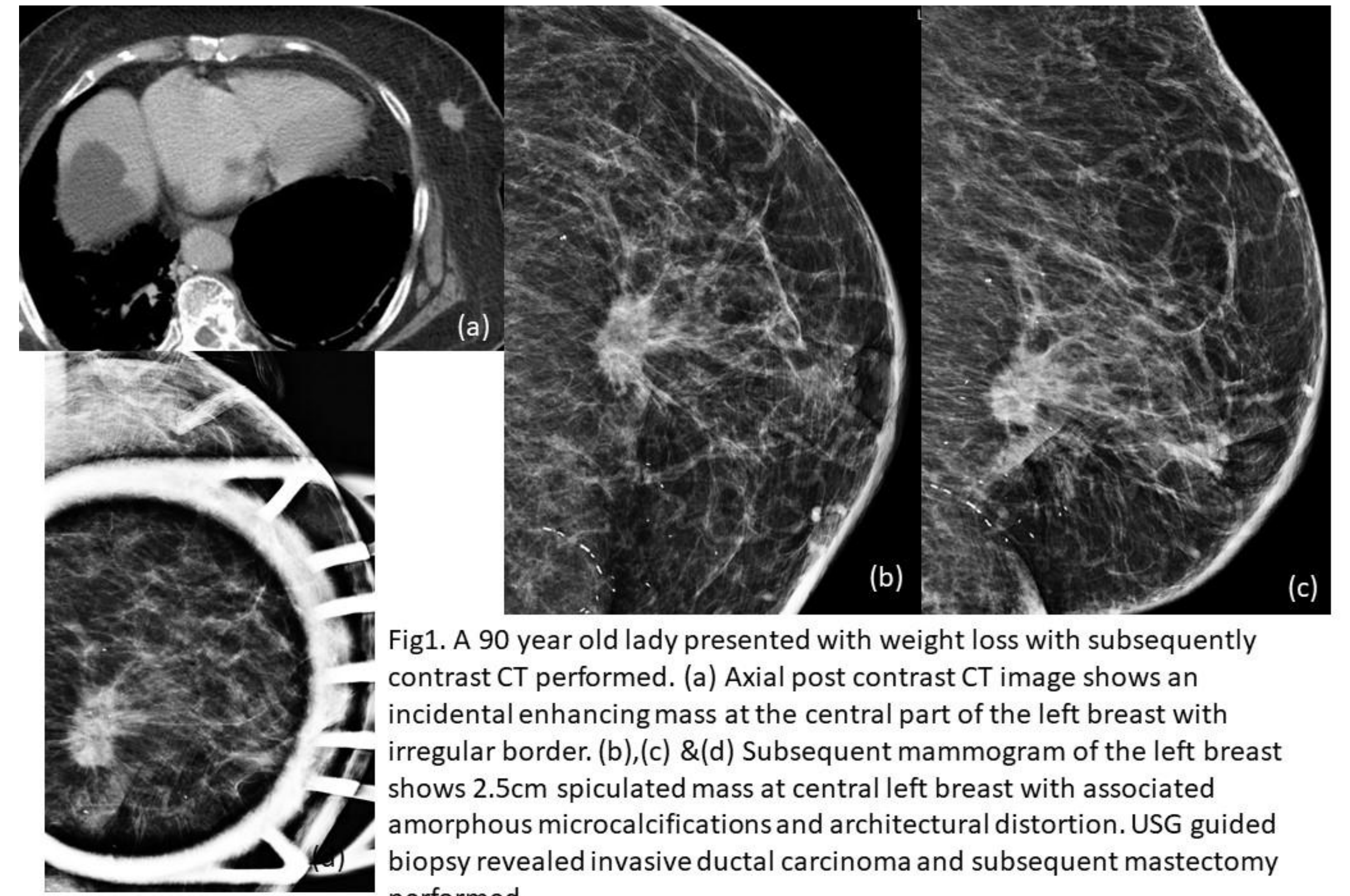
With the increasing use of computed tomography (CT), incidental breast lesions are not uncommonly encountered. The aim of the study is to review the outcome of further assessment of breast abnormalities detected incidentally by CT and the lesion characteristics associated with malignancy.

## Methods

A retrospective observational study of patients referred to the breast unit, a tertiary referral centre in Hong Kong, with incidental CT detected breast lesion(s) from June 2015 to March 2019. Patients with insufficient clinical and/or imaging data were excluded. The association of CT imaging features (including maximum diameter, contrast enhancement, shape, margin and abnormal axillary lymph node) and malignancy was assessed using Fisher's exact test and Mann-Whitney U test. The positive and negative predictive values (PPV, NPV) with 95% confidence interval (CI) of the significant features were calculated.

## Results

Among the 66 referrals received during the study period, 52 referrals (mean age, 61.1 years; range, 38-90 years) with a total of 54 lesions were included. The mean maximum diameter of the lesion was 1.3cm ( $\pm 0.7$ cm). There were 11 lesions (20.4%) found malignant, of which 10 (91%) were invasive ductal carcinoma and one was metastatic renal cell carcinoma. Malignancy was associated with positive contrast enhancement (8/8 [100%] vs 9/38 [23.7%];  $p < 0.001$ ) and irregular shape (7/11 [63.6%] vs 10/43 [23.3%];  $p = 0.025$ ). The PPV and NPV for positive contrast enhancement were 47.1% (95% CI, 26.2%-69.0%) and 100% (95% CI, 88.3 %-100%), respectively; whereas those for irregular shape were 41.2% (95% CI, 21.6%-64.0%) and 89.2% (95% CI, 75.3%-95.7%), respectively.



## Discussion

The proportion (20%) of incidental CT detected breast lesion subsequently diagnosed with breast malignancy was significant, and was similar to past reports. This would stress the importance of formal triple assessment of incidental CT detected breast lesions, and careful review of the breast should be a routine part of chest CT examinations. The high negative predictive value for positive contrast enhancement and irregular shape supports these as discriminating features for malignancy. Although margin has not been shown to be a statically significant feature, non-circumscribed lesions has a tendency to be malignant. Paying additional attention to non-circumscribed lesions would be also recommended. On the other hand, the total sample size of abnormal lymph node is small ( $n=1$ ) which may underestimate its true significance.

## Conclusions

The presence of contrast enhancement and/or irregular shape in incidental CT detected breast lesions would warrant prompt assessment. They would be a good considering when triaging the patients' appointment.

Table 1. Characteristic of 54 lesions in 52 referrals

	Benign (n=43)	Malignant (n=11)	p value	All (n=54)
Maximum diameter (cm)	1.30 $\pm$ 0.73	1.26 $\pm$ 0.76	0.821	1.29 $\pm$ 0.73
Contrast enhancement*			<0.001	
Negative	29 (76.3)	0		29 (63.0)
Positive	9 (23.7)	8 (100)		17 (37.0)
Shape			0.025	
Regular (oval/ round)	33 (76.7)	4 (36.4)		37 (68.5)
Irregular	10 (23.3)	7 (63.6)		17 (31.5)
Margin			0.143	
Circumscribed	16 (37.2)	1 (9.1)		17 (31.5)
Non-circumscribed	27 (62.8)	10 (90.9)		37 (68.5)
Indistinct	23	8		31
Microlobulated	3	0		3
Spiculated	1	2		3
Abnormal axillary lymph nodes			0.204	
No	43 (100)	10 (90.9)		53 (98.1)
Yes	0	1 (2.3)		1 (1.9)

Values are expressed in mean  $\pm$  SD or count (%)

\*Only plain CT performed in 8 lesions

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## References

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