

Table S1 Demographic, clinicopathologic, and follow-up information of patients

Case No.	Source	Age	Site	Size (cm)	Surgery Method	LN Status	Adjuvant Therapy	Follow-up (months)	Outcome
1	Eusebi [5]	58	L-LIQ	1.2	BCS	UK	ND	26	Alive and well
2		70	R-UOQ	1.3	BCS	UK	UK	54	Alive and well
3		57	L-UOQ	1.6	BCS	UK	UK	28	Alive and well
4		74	R	2.0	BCS	UK	UK	108	Alive and well
5		56	UK	0.8	UK	UK	UK	UK	UK
6	Teijeiro [1]	64	R-LQs	4.1	M+ALND	Positive	CT+RT	32	Alive with bone metastasis
7	Tosi [4]	80	R-LOQ	2.5	BCS	Positive	ND	3	Alive and well
8		45	R-UOQ	5.0	BCS	Negative	UK	5	Alive and well
9		61	R	2.0	BCS	Negative	UK	8	Alive and well
10		47	R	2.3	BCS	Negative	UK	10	Alive and well
11	Chang [1]	66	L-UIQ	1.1	BCS+SLNB	Negative (0/3)	ND	12	Alive and well
12	Masood [1]	57	L-UQs	3.7	M+ALND	Negative (0/14)	UK	UK	UK
13	Colella [1]	79	R	3.0	M+ALND	Negative (0/8)	UK	18	Alive and well
14	Chiang [13]	68	L	0.9	UK	UK	UK	UK	UK
15		62	L	0.8	UK	Negative (0/2)	RT	77	Alive and well
16		63	L	1.2	UK	UK	UK	UK	UK
17		79	R	UK	UK	UK	UK	UK	UK
18		64	R	1.8	UK	Negative (0/2)	UK	31	Alive and well
19		51	R	0.8	UK	Negative (0/3)	ND	30	Alive and well
20		64	L	1.4	UK	Negative (0/1)	RT	29	Alive and well
21		58	R	0.6	UK	UK	UK	UK	UK
22		66	R	0.9	UK	Negative (0/3)	CT	20	Alive and well
23		65	L	1.5	UK	Negative (0/2)	CT+RT	37	Alive and well
24		70	L	1.3	UK	Negative (0/2)	UK	12	Alive and well
25		65	L	1.2	UK	Negative (0/4)	UK	UK	UK
26		65	L	0.9	UK	UK	UK	UK	UK
27	Bhargava [3]	65	L	0.9	UK	UK	ND	19	Alive and well
28		77	L-OQs	1.7	UK	UK	ND	UK	UK
29		48	R-UQs	1.2	BCS	UK	NAC	19	Alive and well
30	Foschini [13]	58	L-LIQ	1.2	BCS+SLNB	Negative	ND	108	Alive with recurrence
31		80	R-LOQ	2.5	BCS	Positive (1/1)	ND	120	Alive and well
32		61	R	2.0	BCS+SLNB	Negative	ND	132	Alive and well
33		62	L	1.0	BCS	UK	ND	96	Alive and well
34		51	L	2.0	BCS	UK	ND	UK	UK
35		58	L	0.8	BCS+SLNB	Negative	ND	24	Alive and well
36		61	L-IQs	0.6	BCS	UK	ND	124	Alive and well
37		50	R	0.8	BCS	UK	CT+RT	84	Alive and well
38		59	R-UOQ	2.5	BCS	UK	ND	76	Alive and well
39		48	L	2.2	BCS	UK	ND	24	Alive and well
40		85	R	1.5	BCS	UK	ND	UK	UK
41		64	L-LIQ	2.0	BCS+ALND	Negative (0/11)	ND	36	Alive and well
42		77	R	1.2	BCS	UK	ND	24	Alive and well
43	Alsadoun [9]	63	L	1.6	BCS	UK	UK	UK	UK
44		70	L	1.1	BCS	UK	ND	UK	UK
45		72	R	1.0	BCS	UK	ND	UK	UK
46		64	L	1.5	BCS	UK	UK	UK	UK
47		71	L	0.9	BCS	UK	UK	UK	UK
48		52	R	4.0	BCS	UK	UK	UK	UK
49		69	L	1.0	BCS+SLNB	UK	ND	53	Alive and well
50		57	R	1.2	BCS	UK	UK	UK	UK
51		75	R	3.0	BCS	UK	UK	UK	UK
52	Gai [1]	55	R-UIQ	UK	M+SLNB	Negative	UK	UK	UK
53	Zhong [8]	63	L	0.6	UK	UK	UK	UK	UK
54		63	R	1.0	UK	UK	UK	UK	UK
55		79	R	1.6	M	Negative	UK	UK	UK
56		69	L	1.2	UK	UK	UK	UK	UK
57		69	L	1.8	UK	UK	UK	UK	UK
58		71	R	1.7	UK	UK	UK	UK	UK
59		74	R	0.8	UK	UK	UK	UK	UK
60		76	L	0.7	UK	UK	UK	UK	UK
61	Lozada [3]	60	UK	1.1	UK+SLNB	Negative	UK	UK	UK
62		60	UK	2.1	BCS	Negative	RT	UK	UK
63		67	UK	0.6	UK	UK	UK	UK	UK
64	Pareja [9]	67	UK	1.0	UK	UK	UK	UK	UK
65		59	UK	1.5	BCS	Negative	RT	UK	UK
66		64	UK	1.2	BCS	Negative	RT	UK	UK
67		70	UK	1.3	UK	UK	UK	UK	UK
68		67	UK	1.7	UK	Negative	UK	UK	UK
69		60	UK	2.6	UK	Negative	UK	UK	UK
70		47	UK	1.3	UK	UK	UK	UK	UK
71		80	UK	0.6	UK	UK	UK	UK	UK
72		46	UK	0.6	UK	UK	UK	UK	UK
73	Haefliger [1]	60	R-LIQ	0.8	BCS+SLNB	Negative	UK	8	Alive and well
present	Zhang (1)	45	L-UOQ	1.0	BCS+SLNB	Negative (0/6)	CT+RT	12	Alive and well

L, left, R, right, U, upper, L, lower, O, outer, I, inner, Q, quadrant, BCS, breast conserving surgery, M, mastectomy, SLNB, sentinel lymph node biopsy, ALND, axillary lymph node dissection, LN, lymph node, CT, chemotherapy, RT, radiotherapy, UK, unknown, ND, not done.

Table S2 Immunohistochemical and hotspot gene mutations information of patients

Case No.	ER	PR	AR	HER-2	CK5/6	p63	GCDFP-15	TTF-1	Thy	IDH2	PIK3CA
1	-	-	+	ND	ND	ND	+	-	-	ND	ND
2	-	-	-	ND	ND	ND	-	-	-	ND	ND
3	-	-	-	ND	ND	ND	-	-	-	ND	ND
4	-	-	-	ND	ND	ND	-	-	-	ND	ND
5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
6	+	+	+	-	ND	ND	+	-	-	ND	ND
7	-	-	-	ND	ND	+/-	+	-	-	ND	ND
8	++	++	-	ND	ND	-	+++	-	-	ND	ND
9	+/-	-	ND	ND	ND	ND	-	-	-	ND	ND
10	++	++	-	ND	ND	+	-	-	-	ND	ND
11	+	-	-	-	ND	-	+	-	ND	ND	ND
12	+	+	ND	-	ND	ND	ND	-	-	ND	ND
13	-	-	ND	-	ND	ND	+	-	-	ND	ND
14	-	-	ND	ND	+	-	+	-	ND	-	+
15	-	-	-	-	+	-	-	-	-	+	+
16	+	+	-	ND	+	-	+	ND	ND	+	+
17	-	-	-	ND	+	-	+	-	-	+	+
18	-	-	-	-	+	-	+	-	-	+	+
19	+	+	-	-	+	-	+	-	ND	-	+
20	+	-	-	-	+	-	-	-	-	+	-
21	-	-	-	-	-	-	-	-	-	+	+
22	-	-	-	-	+	-	+	-	-	+	+
23	+	-	ND	-	+	-	-	-	-	+	+
24	+	-	-	-	+	-	+	-	-	-	+
25	-	-	-	-	+	-	-	-	-	+	-
26	-	-	+	-	+	-	+	-	-	+	+
27	-	ND	ND	ND	+	-	ND	ND	ND	+	-
28	+	ND	ND	ND	+	-	+	-	-	-	-
29	+	ND	+	ND	+	-	ND	ND	ND	+	+
30	-	-	-	-	+	-	-	-	-	+	-
31	-	-	-	-	+	-	-	-	-	ND	ND
32	+	-	-	-	-	-	-	-	-	ND	ND
33	-	-	ND	-	ND	-	ND	-	-	ND	ND
34	-	-	ND	-	-	-	ND	-	ND	ND	ND
35	+	+	-	-	ND	-	+	-	-	ND	ND
36	-	-	-	-	+	ND	+	-	-	ND	ND
37	-	-	-	-	-	-	-	-	-	ND	ND
38	-	-	-	-	+	-	-	-	-	+	+
39	-	-	-	-	+	-	+	-	-	ND	ND
40	-	-	-	-	+	-	-	-	-	+	+
41	-	-	-	-	ND	-	+	-	-	ND	ND
42	+	+	-	-	+	-	+	-	-	ND	ND
43	+	+	+	-	+	-	+	-	ND	-	ND
44	-	-	+	-	+	-	+	-	ND	+	ND
45	+	-	+	-	+	-	+	-	ND	+	ND
46	-	-	-	-	+	-	-	-	ND	+	ND
47	-	-	-	-	+	-	+	-	ND	+	ND
48	+	+	+	-	+	-	+	-	ND	+	ND
49	-	-	-	-	+	-	-	-	ND	+	ND
50	+	-	+	-	-	-	+	-	ND	+	ND
51	+	+	-	-	+	-	+	-	ND	-	ND
52	-	-	ND	-	+	-	-	-	-	ND	ND
53	-	-	ND	-	ND	+	ND	ND	ND	+	+
54	-	-	-	-	+	-	ND	-	ND	+	-
55	ND	ND	-	ND	+	-	ND	-	ND	+	+
56	+	-	ND	-	ND	ND	ND	ND	ND	+	+
57	-	-	ND	-	ND	ND	+	-	ND	+	+
58	-	-	ND	-	ND	ND	-	-	ND	+	+
59	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
60	+	+	ND	ND	ND	-	ND	ND	ND	+	+
61	-	-	ND	-	+	-	ND	ND	ND	+	+
62	-	-	ND	-	+	-	ND	ND	ND	+	+
63	-	-	ND	-	+	-	ND	ND	ND	+	-
64	-	ND	+	ND	+	-	ND	ND	ND	+	-
65	+	ND	+	ND	ND	-	ND	ND	ND	+	-
66	+	ND	+	ND	+	-	ND	ND	ND	+	-
67	-	ND	+	ND	+	-	ND	ND	ND	+	+
68	-	ND	-	ND	+	-	ND	ND	ND	+	+
69	+	ND	+	ND	+	-	ND	ND	ND	+	+
70	-	ND	+	ND	+	-	ND	ND	ND	+	-
71	+	ND	+	ND	+	-	ND	ND	ND	+	-
72	-	ND	ND	ND	+	-	ND	ND	ND	+	-
73	-	-	-	-	+	-	ND	-	ND	+	+
present	-	-	+	-	+	-	+	-	-	+	+

ER, estrogen receptor; PR, progesterone receptor; AR, androgen receptor; HER-2, human epidermal growth factor receptor 2; CK, cytokeratin; GCDFP-15, gross cystic disease fluid protein-15; TTF-1, thyroid transcription factor-1; Thy, thyroglobulin; ND, not done.