

c-erbB-2

= Abstract =

c-erbB-2 Oncoprotein Assay in Ovarian Carcinoma and Its Clinical Correlation with Prognostic Factors

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c-erbB-2 oncogene is a gene that encodes a growth factor receptor-like molecule with tyrosine kinase activity and has a structure similar to that of the epidermal growth factor receptor. Overexpression of the c-erbB-2 oncoprotein is detected in human adenocarcinoma of the breast, cervix, and salivary gland, in all of which the association between overexpression of the c-erbB-2 and poor prognosis of the disease has been reported. The role of c-erbB-2 oncoprotein in the tumorigenesis of the human ovary has been poorly understood and remains controversial. In order to explore the relationship between c-erbB-2 oncoprotein status and ovarian carcinoma, tissue from 32 patients, each of whom had invasive ovarian carcinoma prior to treatment, 10 patients with benign cyst and 10 control case who underwent hysterectomy due to gynecological disease at Yonsei University College of Medicine were analyzed. We measured c-erbB-2 oncoprotein with an enzyme-linked immunosorbent assay(ELISA) which was a sandwich type. Patients with invasive ovarian cancer were found to have significantly higher median c-erbB-2 oncoprotein expression than patients with either benign ovarian cyst($P<0.05$) or control group($P<0.05$), respectively. However there was no significant difference in c-erbB-2 oncoprotein status between benign cyst and control group. Overexpression of c-erbB-2 oncoprotein was found in 7 of 32(21.9%) epithelial ovarian cancer. In invasive epithelial cancer, no significant difference in c-erbB-2 oncoprotein levels was noted when stratified according to age, menopausal status, histological cell type, tumor size or surgical stage. Our results were consistent with the concept that c-erbB-2 oncoprotein may play an important role in malignant and tumorigenesis in epithelial ovarian cancer.

Keywords: c-erbB-2 oncoprotein, Ovarian carcinoma

* 1996

1 1995 11 52
32 , 10
, 10 32
가 , 28 ,
4
가
.14) c-erbB-2 185-KDa
(c-erbB-1)
2. c-erbB-2
, c-erbB-2
, HER-25) neu68
c-erbB-2 가 ,
transmembrane
.911) 가 가
88%
가
c-erbB-2
,12-15)
가 .16-18) c-erbB-2
radioligand binding assay,
, multiparameter flow-cytometry
(enzyme immunoassay)
.19)
c-erbB-2
가
1.
1993
2 plotting
c-erbB-2
ice-cold receptor buffer(10 mM Tris HCL(pH 7.4),
1.5 mM EDTA, 10% glycerol ,0.1% sodium azide)
가 (homogenize)
10 1000 2000 G
Lowry
2) c-erbB-2
(c-erbB-2 EIA kit, oncogene Science,Inc., NY)
mouse monoclonal capture
antibody21) sandwich type immunoassay
c-erbB-2 coating microtiter assay
plate ()
solid phase
plate . hoaradish peroxide c-erbB-2 plate
가 c-erbB-2
plate
plate
(hydrogen peroxide O-phenylenediamine)
c-erbB-2
2.5N sulfuric acid 가
490nm
c-erbB-

c-erbB-2 cytosol c-erbB-
2 fmole/mg cytosol protein
Mann-Whitney
U test, Kruskal-Wallis test p-value가
0.05 가

62, 186, 223, 417 fmole/mg protein

(Table 2).

Table 2. c-erbB2 Oncoprotein Status according to surgical stage

Stage	No. of cases	c-erbB2(fmole/protein)		
		Mean	Median	Range
	8	104	62	19 663
	2	186	186	22 350
	19	246	223	24 612
	3	418	417	23 912

2. (Relationship with initial and residual tumor size)

20 cm 가 20 cm 가
(p < 0.05)(Table 3).

c-erbB-2

Table 3

c-erbB-2

가

3. (Relationship with cell type)

c-erbB-2 49, 72, 345,

56 fmole/mg protein

(Table 4).

Table 1. c-erbB-2 Oncoprotein Status in control, Benign cyst, and Carcinoma

	No. of cases	Positive rate(%)	c-erbB-2(fmole/mg protein)		
			Mean	Median	Range
Control	10	0	32	33*	25 93
Cyst	10	0	42	32**	24 92
Carcinoma	32	21.9	148	66	19 912

* P < 0.05(carcinoma vs control).

** p < 0.05(carcinoma vs Benign cyst)

Table 3. c-erbB2 Oncoprotein Status according to initial and residual tumor size

	No. of cases	c-erbB2(fmole/mg protein)			
		Mean	Median	Range	
Initial tumor size					
20 cm	8	436	449	119	912
<20 cm	24	178	134	24	290
Residual tumor size					
2 cm	7	131	45	28	622
<2 cm	25	156	67	19	912

* p < 0.05

Table 4. c-erbB2 Oncoprotein Status according to histological cell type

	No. of cases	c-erbB2(fmole/mg protein)			
		Mean	Median	Range	
Serous	17	136	49	19	912
Mucinous	8	61	72	24	90
Endometrioid	2	345	345	26	663
Clear	2	56	56	42	70

4. (Relationship with pelvic lymph node involvement)

Table 5 c-erbB-2

c-erbB-2 (P < 0.05).

Table 5. c-erbB2 Oncoprotein Status according to lymph node involvement

	No. of cases	c-erbB2(fmole/mg protein)			
		Mean	Median	Range	
Positive	6	375	323*	29	912
Negative	26	96	62	19	663

* p < 0.05

c-erbB-2 1980

neu

ethyl nitrosourea

,68) c-erbB-

retroviral gene v-erbB

HER-2 DNA library v-erbB

DNA

c-erbB-2, HER-2, neu

c-erbB-2 17

, c-erbB-2 m-RNA(4.6kb)

(p185)

가

trans-

membrane) .91)

가

, 88%가

c-erbB-2

가

c-erbB-2

가

24가 ,

neu monoclonal antibody가 neu-

transformed cell line 25-27)

c-erbB-2

, c-erbB-2

, c-erbB-2

Westen blot assay,12-13) immuno-

precipitation method,12-13) ,12-18,28,32) flow-

cytometric analysis,32) 가

, c-erbB-2

(enzyme immunoassay) , c-erbB-2

c-erbB-2

가 ,

가 , .19)

, polyclonal antibody mono-

clonal antibody , , .1618)

21.9% c-erbB-2 (overexpression)

cut-off c-erbB-2

9 72%

,1218,2833)

.18)

10 가 93 fmole/mg

cytosol protein cut-off c-erbB-2

100 fmole/mg cytosol protein

, c-erbB-2 ,

, 가 ,

.141534)

c-erbB-2

1215)

1618) 가

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c-erbB-2

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1993 1 1995 11

32 , 10 ,

10

c-erbB-2

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1. (n=32) 21.9%(n=7) c-erbB-2
2. 가 , 가
- (20 cm), 가 c-erbB-2
3. , , c-erbB-2

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