

Beta-catenin CEACAM6 expression and prognostic value in elderly breast cancer tissues

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Abstract: Objective To detect characteristics of the elderly breast cancer tissue beta-catenin and the CEACAM6 protein and to explore the relationship between the two and clinical value. **Methods** As the observation group 82 cases of breast cancer in elderly postoperative specimens were selected from paraffin blocks, as a control group 60 cases of normal breast tissue were selected. The application of flow cytometry to detect the two groups in beta-catenin and CEACAM6 protein, explore the beta-catenin and CEACAM6 in the expression of the difference of the clinical and pathological features, focus on their relevance. Amount of beta-catenin protein expression. **Results** The results of the observation group were significantly lower than the control group. CEACAM6 protein expression was significantly higher in the observation group. Beta-catenin and CEACAM6 protein expression and lymph node metastasis, vascular infiltration, the expression of ER was seen in observation group. PR is closely related to the expression of beta-catenin and CEACAM6. Observation group has a negative correlation, survival analysis showed that high expression of beta-catenin and CEACAM6 in the patient is poor prognosis. **Conclusion** Elderly breast cancer tissue beta-catenin and CEACAM6 expression, both on the progress of disease has an important role, the detection after beta-catenin and a CEACAM6 the expression may have a certain value in prognosis.

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Breast cancer is common in the elderly, is closely related to its development and biological behavior, because the tumor is the result of the evolution of multi-factor, so study the expression of the protein is important [1]. Beta-catenin is a classic member of the family of adhesion, epithelial cell surface adhesion molecules, studies have shown that in recent years is closely related with tumor progression [2]. Carcinoembryonic antigen-related cell adhesion molecule 6 (carcino-embryonic antigen related cellular adhesion molecule 6 CEACAM6) is a transmembrane glycoprotein that is formed in the cell surface and membrane, carcinoembryonic antigen subtypes, recent studies have found that with a cell adhesion attached. This experiment detected by flow cytometry elderly breast cancer tissue expression of beta-catenin and CEACAM6, explore its clinical value.

1 Materials and methods

1.1 Materials collected in our hospital in August 2008 - August 2009 elderly fresh frozen specimens after breast cancer surgery as the observation group, HE sections confirmed again by the pathologist application and in accordance with the WHO diagnostic criteria. The preoperative none radiotherapy and chemotherapy. The group selected a total of 82 cases were female, aged 60-71 years, mean 64.1 years. Select other Quadrant normal elderly breast tissue 60 cases as the control group,

age 60-68 years, mean 63.4 years.

1.2 β -catenin and CEACAM6 protein detection experiments with rabbit anti-human beta-catenin and the the CEACAM6 protein concentrate were purchased from Zhongshan Golden Bridge Biotechnology, beta-catenin and a CEACAM6 the expression using flow cytometry to detect, the machine prior to the preparation of good single cell suspension of 1ml and the strict experimental steps after testing on the machine, the application of BC flow cytometry to detect, good quality control.

1.3 Flow cytometry detection of beta-catenin and CEACAM6 protein criterion semi-quantitative expression of beta-catenin and CEACAM6 protein fluorescence index (FI). FI value calculated as:

$$FI = \frac{\text{Beta-catenin or CEACAM6 protein expression in breast cancer fluorescence intensity} - \text{mean fluorescence intensity of the control sample}}{\text{The average fluorescence intensity of the control sample}}$$

1.4 Statistical analysis: SAS 6.12 for analysis, t-test, correlation analysis, and survival analysis, P <0.05 was considered statistically significant.

2 Results

Semi-quantitative expression observed in the group of 2.1 two groups in beta-catenin and CEACAM6 protein beta-catenin expression was

significantly lower than the control group, the observation group CEACAM6 expression was significantly higher than that in the control group, as shown in table 1.

Table 1. CEACAM6 expression

| Group | Cases | β -catenin | t | P | CEACAM6 | t | P |
|-------------------|-------|------------------|------|--------|-----------------|-------|---------|
| Control group | 82 | 1.00 \pm 0.13 | 8.68 | 0.0054 | 1.00 \pm 0.21 | 11.21 | <0.0001 |
| Observation Group | 60 | 0.75 \pm 0.14 | | | 1.36 \pm 0.24 | | |

2.2 Observation group semi-quantitative beta-catenin and CEACAM6 protein expression in breast cancer clinical pathological features of the relationship between the observation group of beta-

catenin and CEACAM6 expression and tumor lymph node metastasis, vascular invasion, ER and PR expression is closely related.

Table 2 beta-catenin and semi-quantitative CEACAM6 protein expression in breast cancer clinical and pathological features of the observation group

| Clinical And pathological feature | Nnumber | β -catenin | t | P | CEACAM6 | t | P |
|-----------------------------------|---------|------------------|------|--------|-----------------|-----|--------|
| Vascular invasion | | | | | | | |
| No | 58 | 0.82 \pm 0.14 | 5.64 | 0.0293 | 1.32 \pm 0.30 | 5.4 | 0.0211 |
| Have | 24 | 0.64 \pm 0.15 | | | 1.47 \pm 0.29 | | |
| Lymph node metastasis | | | | | | | |
| No | 52 | 0.82 \pm 0.20 | 5.43 | 0.0301 | 1.32 \pm 0.27 | 6.0 | 0.0182 |
| Have | 30 | 0.62 \pm 0.17 | | | 1.45 \pm 0.28 | | |
| ER | | | | | | | |
| + | 37 | 0.86 \pm 0.18 | 6.53 | 0.0192 | 1.23 \pm 0.27 | 7.6 | 0.0102 |
| - | 45 | 0.65 \pm 0.17 | | | 1.46 \pm 0.25 | | |
| PR | | | | | | | |
| + | 39 | 0.85 \pm 0.17 | 6.04 | 0.0241 | 1.24 \pm 0.32 | 7.0 | 0.0136 |
| - | 43 | 0.66 \pm 0.15 | | | 1.45 \pm 0.24 | | |

2.3 observation group beta-catenin and CEACAM6 expression by linear correlation analysis showed that the expression of beta-catenin and CEACAM6 in the observation group were negatively correlated ($r = -0.43$, $P = 0.0317$).

2.4 in the observation group, the expression of beta-catenin and CEACAM6 and survival follow-up time of 9-48 months, with an average of 25.2 months. Survival analysis showed that the observation group the expression of beta-catenin and CEACAM6 associated with survival time ($P = 0.0127$), beta-catenin low expression of CEACAM6 poor prognosis patients with high expression.

3 Discussion

Beta-catenin is not only the core members of the Wnt signaling pathway, but also adhere to an important member of the family, and intercellular adhesion have an important role in the regulation of cell. Studies have shown that beta-catenin and E-cadherin binding and cause high expression of both, can effectively inhibit tumor metastasis [4]. But for

normal adult tissues and cells, beta-catenin protein in combination with cell surface E-cadherin, involved in the the homogeneity adhesion. The CEACAM6 widely expressed in epithelial cells and vascular endothelial cells on tumor growth, proliferation and apoptosis of epithelial cells of epithelial cells play an important role, and to promote tumor cell invasion, and enhance endothelial cell viability. Recent studies have shown that CEACAM6 is a potential oncogene, adhesion factor and vascular-derived growth factor, which may be how to play in tumor progression [5,6]. In this study, analyzed by flow cytometry elderly breast cancer tissue beta-catenin and CEACAM6 expression elderly breast cancer tissue, the results showed low expression of beta-catenin, CEACAM6 expression, suggesting that both abnormal expression of the progression of breast cancer an important role in promoting. Experimental results show that the observation group beta-catenin and a CEACAM6 the expression and lymph node metastasis, vascular invasion, ER, PR expression is closely related to

lymph node metastasis, vascular invasion and tumor progression is closely related to, beta- catenin and CEACAM6 abnormal expression of a significant role in promoting tumor progression. And lymph node metastasis, vascular invasion, ER and PR expression in conventional pathological diagnosis and clinical observation are closely related to prognosis indicators, combined detection of beta-catenin and a CEACAM6 the expression may be related to prognosis, survival analysis directly confirmed this conclusion. Experimental results show that beta-catenin and CEACAM6 negative correlation, suggesting that they have synergistic negative effect, the role of both beta-catenin and CEACAM6 may have a path role, involved in cell junction changes in the tumor cells, and jointly promote tumor growth, invasion and metastasis. abnormal beta-catenin expression so that the Wnt / beta-catenin pathway disorder, caused by beta-catenin into the nucleus to the cytoplasm is not phosphorylated and degraded, in conjunction with TCF / LEF complex, start the transcription of downstream target genes that promote tumor The invasion and metastasis. CEACAM6 expression may CEACAM family by external and / or internal autocrine activation of oncogenes and regulate adhesion [7], as well as studies suggest that CEACAM6 expression in endothelial cells by affecting cell scaffold structure and integrin-mediated The activation of the signal transduction, angiogenesis participation phase [8,9].

In short, elderly breast cancer tissue beta-catenin low expression of CEACAM6 expression, they may have negative synergy, and jointly promote tumor progression, the postoperative combined detection of beta-catenin and a CEACAM6 the expression on the prognosis of a certain value.

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