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Molecular subtype approximated by quantitative estrogen receptor, progesterone receptor and Her2 can predict the prognosis of breast cancer

Xiao-song Chen[1,2,4], Chuan-dong Ma[1,4], Jia-yi Wu[1,2,4], Wen-tao Yang[3,4], Hong-fen Lu[3,4], Jiong Wu[1,4], Jin-song Lu[1,4] , Zhi-min Shao[1,4], Zhen-zhou Shen[1,4], and Kun-wei Shen[1,2,4]

[1]Department of Breast Surgery, Cancer Hospital, Fudan University, Shanghai; [2]Comprehensive Breast Health Center, Ruijin Hospital, Shanghai Jiaotong University School of Medicine, Shanghai; [3]Department of Pathology, Cancer Hospital, Fudan University, Shanghai; [4]Department of Oncology, Shanghai Medical College, Fudan University, Shanghai, China

ABSTRACT

Aims and background. To investigate the clinicopathological characteristics and prognosis of breast cancer subtypes classified by quantitative estrogen receptor (ER), progesterone receptor (PR), and Her2.

Methods and study design. 923 patients with primary breast cancer having a median age of 53 years who were treated at the Cancer Hospital of Fudan University in Shanghai between January 2002 and June 2004 were retrospectively analyzed. Four molecular subtypes were constructed from the immunohistochemical results of quantitative hormone receptor (HR) and Her2 status. HR+ was defined as ER+ and PR+, HR± as ER/PR+ at lower levels or lacking either ER or PR, and HR- as both ER- and PR-. The four subtypes were HR+/Her2-, HR±/Her2-, HR-/Her2- (triple-negative), and Her2+. Clinical and pathological parameters, disease-free survival (DFS), and overall survival (OS) measurements were compared between patients with different molecular subtypes.

Results. The proportions of HR+/Her2-, HR±/Her2-, triple-negative, and Her2+ breast cancer were 36.6% (338/923), 22.9% (211/923), 20.6% (190/923), and 19.9% (194/923). The median follow-up was 49.0 months (4-77 months). In 145 cases disease recurrence or death occurred. In multivariate analysis with the HR+/Her2- subtype taken as the reference category, triple-negative and Her2+ subtypes were associated with increased recurrence and death with a hazard ratio (HR) of 2.05 (95% CI 1.31-3.20; $P = 0.002$) and 1.89 (95% CI 1.20-2.97, $P = 0.006$) for DFS and 2.84 (95% CI 1.45-5.55; $P = 0.002$) and 2.95 (95% CI 1.51-5.77, $P = 0.002$) for OS, respectively; the HR±/Her2- subtype was marginally associated with poor prognosis with HR 1.51 (95% CI 0.94-2.43; $P = 0.088$) and 1.90 (95% CI 0.92-3.94; $P = 0.084$) for DFS and OS, respectively.

Conclusions. Breast cancer subtypes based on quantitative ER, PR, and Her2 may be predictive of prognosis. Patients whose tumors were not HR+/Her2- had a worse outcome in our study. **Free full text available at www.tumorionline.it**

Key words: breast cancer subtype, estrogen receptor, progesterone receptor, Her2, prognosis.

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Correspondence to: Kun-wei Shen, Comprehensive Breast Health Center, Ruijin Hospital, Shanghai Jiaotong University School of Medicine, 197 Ruijin Second Road, Shanghai, 200025, China.
Tel +86-21-64370045-602208;
fax +86-21-64156886;
e-mail kwshen@medmail.com.cn

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