17

A retrospective FISH study of HER-2/neu oncogene amplification in relapsed and non-relapsed node-negative breast cancer. H.F.L. Mark, B. Aswad, W. Taylor, M. Samy, C.-L. Sun, S. Brown, S. Das, J. Berg and K.J. Bland. Lifespan Academic Medical Center Cytogenetics Laboratory, Rhode Island Hospital and Brown University School of Medicine, Providence, RI.

We previously reported the results of 29 relapsed and 31 non-relapsed cases of node-negative breast cancer studied for HER-2/neu oncogene amplification using FISH and the Vysis HER-2/neu and chromosome 17 control probes (Vysis, Downers Grove, IL). Previous research performed in this laboratory on HER-2/neu amplification in stages I to IV breast cancer indicated that the most aggressive disease stages were associated with the higher frequency of oncogene amplification and the highest level of amplification. These data support the hypothesis that HER-2/neu is a prognostic marker of poor outcome. Thus, a retrospective study of HER-2/neu amplification in relapsed and non-relapsed node-negative breast cancer was initiated to explore further the above question. Out of a total of 46 relapsed cases studied, 13 (28.3%) were found to be amplified. The corresponding frequency of amplification for the controls was 4 (8.7%) of 46 non-relapsed cases. The difference was statistically significant with a p value of <0.05. Although these results still need to be confirmed and extended in other centers, they are quite remarkable and suggest an association between HER-2/neu amplification and disease relapse in patients with node-negative breast cancer. Our results also demonstrate that FISH is a sensitive technique for studying oncogene amplification in archival pathological specimens. (This study was partially funded by Vysis, Inc., Downers Grove, IL).

18

HER-2/neu oncogene amplification in prostate cancer. H.F.L. Mark, D. Feldman, S. Das, H. Kye, C.-L. Sun and M. Samy. Lifespan Academic Medical Center Cytogenetics Laboratory, Rhode Island Hospital and Brown University School of Medicine, Providence, Rhode Island.

Oncogene amplification is a manifestation of genetic instability, which has been implicated in the pathogenesis of many cancers. Work performed in this laboratory has focused on HER-2/neu amplification in breast cancer, ovarian cancer, cervical cancer and rhabdomyosarcoma, all of which revealed HER-2/neu amplification in at least a proportion of tumors. In the present project, we studied HER-2/neu oncogene amplification in prostate carcinoma, 244,000 new cases of which are diagnosed yearly, and which affects a significant number of men. Fluorescent *in situ* hybridization (FISH) using the Vysis HER-2/neu probe with a chromosome 17 centromere control probe was performed on formalin-fixed paraffin-embedded archival prostate cancer tissues. Out of a total of 85 cases studied, 7 cases (8.2%) were found to be amplified. Of those 7 amplified cases, 2 were also trisomic for chromosome 17. Amplification is defined as a signal ratio of HER-2/neu to chromosome 17 of ≥ 1.5, after Mark et al. (1998). Clinicopathologic characteristics of the amplified cases versus the nonamplified cases will be compared. Although the results of the present study still need to be confirmed and extended by additional cases in other centers, the data thus far do indicate that a small subset of prostate cancer is characterized by HER-2/neu gene amplification, as in other cancers. (This study was partially funded by Vysis, Inc., Downers Grove, IL).