

00242 Impact of 2018 American Society of Clinical Oncology/college of American Pathologists (ASCO/CAP) Human Epidermal Growth Factor Receptor 2 (HER2) Gene Testing Guidelines: A Retrospective Study on HER2 Fluorescence in Situ Hybridization (FISH) Results in In

Lim Tse Hui, Lim Soon Tiong Alvin, Ng Yit Jun, Yeap Yee Shan Yvette, Ho Kah Kee Josephine, What Cheng Har Klara, Tien Sim Leng, Tan Puay Hoon

Singapore General Hospital

Aims: HER2 amplification in invasive breast carcinoma is used as a predictive marker for trastuzumab treatment. Currently, both immunohistochemistry (IHC) and FISH testing algorithms have been based on the 2013 ASCO/CAP guidelines. Under the new 2018 updates, concomitant review of FISH with IHC results is recommended. This study assessed the impact of the updated guidelines.

Methodology: Retrospective review of 1,321 breast carcinomas from Jan 2016-May 2018 with concurrent IHC and HER2/CEP17 dual-probe FISH results based on 2013 ASCO/CAP guidelines was performed. Non-amplified HER2 FISH is defined as HER2/CEP17 ratio <2.0 with <4.0 HER2 copies, equivocal as ratio <2.0 with ≥ 4.0 to <6.0 HER2 copies and amplified as ratio ≥ 2.0 or ratio <2.0 with ≥ 6.0 HER2 copies. Using 2018 guidelines, FISH results were reviewed concomitantly with IHC for FISH equivocal (n=27) and amplified groups (ratio ≥ 2.0 with <4.0 HER2 copies, n=1 and ratio <2.0 with ≥ 6.0 HER2 copies, n=73). Concordance rate between FISH and IHC assays were compared.

Result: Concordance rate for FISH and IHC remained at 93% under 2013 and 2018 classifications. A total of 101 cases (7.6%) required further concomitant review of IHC results. For the group with ratio <2.0 and ≥ 6.0 HER2 copies (n=73), HER2 remained as amplified under the new updates as IHC results were equivocal. However, 27 FISH equivocal and 1 amplified cases (ratio ≥ 2.0 with <4.0 HER2 copies) under the 2013 guidelines were re-interpreted as non-amplified after joint IHC review under the new updates. This constituted 2.1% of cases and increased the non-amplified cases from 75.6% to 77.7%.

Conclusion: Under the new updates, concordance rate is similar with slightly more patients being reclassified as HER2 non-amplified. Furthermore, FISH cases that were equivocal under the 2013 guidelines can be re-classified as either amplified or non-amplified depending on IHC results without additional or reflex test.