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Activity: Abstracts

Quantitative Image Analysis of Ki-67 Immunohistochemistry Compared with Manual Pathologist Analysis in Breast Cancer

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Abstract:

Context: Image analysis (IA) is prevalent in pathology quantification. Determining Ki-67 percentage is complicated by tumor type, observer variability, bias and workload.

Design: Spartanburg Medical Center reports 350 breast cancers annually. Biomarker reports from 2012-2013 identified 100 cases with Ki-67 results. Slides with controls were acquired on author's microscope and analysed from multiple fields of view using Applied Spectral Imaging (Carlsbad, California) pathology platform (GenASIS HiPath) using vendor provided IA software algorithms for nuclear staining. Manual semi-quantitative pathologist analysis (MA) for cases scored between 1%-14% and $\geq 15\%$ were compared with IA.

Results: Overall initial concordance between MA and IA was 91/100 cases (91%). MA scored 35 cases as $\leq 14\%$, with IA concordance of $\leq 14\%$ in 30/35 cases (86%). On review of the discordance between MA and IA, MA revised scoring of 4 cases to match IA scoring and brought concordance to 34/35 cases (97%). Of the 65 cases scored by MA as $\geq 15\%$, IA concordance of scoring was 61/65 cases (94%). The 4/65 cases (6%) in which there was discordance, were all scored as 15% by MA and between 12%-14% by IA. Final concordance was 95/100 cases (95%).

Conclusions: Overall high concordance of IA shows value of the technology. As 4 MA cases were revised from a score of under 15% to a score of over 15%, combined with the slight difference in scoring contributing to instances of discordance in cases scored by MA as above 15%, IA is useful in borderline cases suggesting a role for IA in cases scored as 5%-25%.

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