Anatomic Pathology Selected Abstracts, 1/15

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Are amended surgical pathology reports reaching the correct care provider?

Amended reports need to follow patients to treating physicians to avoid erroneous management based on an original diagnosis. The authors undertook a study to determine if amended reports followed patients appropriately. They tracked amended reports with diagnostic changes and discrepancies between ordering and treating physicians. Chart reviews, electronic medical report reviews, and interviews were conducted to establish that the correct physician received the amended report. The authors found that seven of 60 amended reports, all with malignant diagnoses, had discrepancies between the ordering and treating physicians. The amended report was present in the treating physician's chart in only one case. Ordering physicians indicated that amended reports were not forwarded to treating physicians when corrected results arrived after patient referral, under the assumption that the new physician was automatically forwarded pathology updates. No harm was documented in any of the study cases. In one case with a significant amendment, the correct information was entered in the patient chart based on a tumor board discussion. A review of two electronic health record systems uncovered significant shortcomings in each delivery system. The authors concluded that amended reports fail to follow the patient's chain of referrals to the correct care provider, and EHR systems lack the functionality to address this failure and alert clinical teams of amendments.

Parkash V, Domfeh A, Cohen P, et al. Are amended surgical pathology reports getting to the correct responsible care provider? *Am J Clin Pathol.* 2014;142:58–63.

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Evaluation of histological staging systems for primary biliary cirrhosis

A new Japanese histological staging system for primary biliary cirrhosis has been proposed. The authors undertook an evaluation of the efficacies of the Scheuer, Ludwig, and Japanese staging systems, emphasizing their clinical and biochemical correlations and prognostic significance. They conducted a retrospective review of a cohort of 58 Chinese subjects with primary biliary cirrhosis, with follow-up of up to 16.9 years. All three systems correlated well with prognostically significant parameters, namely serum bilirubin, Mayo scores, and model for end-stage liver disease score. Only the Japanese staging system was associated with Child–Pugh score, which was the single independent prognostic factor for liver-related events (log-rank, $P<0.001$; Cox proportional hazard ratio [HR], 6.723; $P<0.001$). The Japanese system (log-rank, $P=0.007$; Cox proportional HR, 10.400; $P=0.025$) predicted liver-related events, while the Scheuer (log-rank, $P=0.112$) and Ludwig (log-rank, $P=0.147$) systems did not. The copper-associated protein deposition score, a component of the Japanese system, was the most powerful prognostic histological parameter (log-rank, $P<0.001$; Cox proportional HR, 99.534; $P=0.049$) and provided extra prognostic values in addition to serum albumin, serum bilirubin, Child–Pugh score, Mayo scores, and MELD score. The authors concluded that the Japanese staging system is more effective than classical systems. The degree of copper-associated protein deposition is an essential prognostic histological parameter.

Chan AW, Chan RC, Wong GL, et al. Evaluation of histological staging systems for primary biliary cirrhosis: correlation with clinical and biochemical factors and significance of pathological parameters in prognostication.

Histopathology. 2014;65:174–186.

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Smooth muscle differentiation classification as a tool for select pleomorphic sarcomas

The clinical relevance of accurately diagnosing pleomorphic sarcomas has been shown, especially in cases of undifferentiated pleomorphic sarcomas with myogenic differentiation, which appear significantly more aggressive. To establish a new smooth muscle differentiation classification and test its prognostic value, 412 sarcomas with complex genetics were examined by immunohistochemistry using four smooth muscle markers—calponin, h-caldesmon, transgelin, and smooth muscle actin. First, two tumor categories were defined: tumors with positivity for all four markers and tumors with no phenotypes or incomplete phenotypes. Multivariate analysis demonstrated that this classification method exhibited the strongest prognostic value compared with other prognostic factors, including histological classification. Second, the incomplete or no smooth muscle phenotype tumor group was divided into subgroups by summing for each tumor the labeling intensities of all four markers. Therefore, a subgroup of tumors with an incomplete but strong smooth muscle differentiation phenotype presenting an intermediate metastatic risk was identified. The authors' results collectively show that the smooth muscle differentiation classification method may be a useful diagnostic tool and a relevant prognostic tool for undifferentiated pleomorphic sarcomas.

Pérot G, Mendiboure J, Brouste V, et al. Smooth muscle differentiation identifies two classes of poorly differentiated pleomorphic sarcomas with distinct outcome. *Mod Pathol.* 2014;27:840–850.

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Congruency of routine clinical predictive biomarker evaluations in breast cancer

The authors conducted a study to investigate in primary breast cancer the congruency of routine clinical predictive biomarker evaluations, including estrogen receptor, progesterone receptor, and Ki67, obtained using immunocytochemistry (ICC) and immunohistochemistry (IHC). They collected clinicopathological data on all women diagnosed with primary breast cancer at Karolinska University Hospital, in Sweden, in 2011. A total of 346 patients were included in a retrospective paired comparison of predictive biomarker evaluations on direct smear ICC and IHC. This showed a low congruency between findings with the two methods, especially evident for Ki67 (κ=0.35–0.42). By making suggested adjustments to ICC cutoffs, the authors managed to improve the inter-rater agreement of Ki67 classification slightly to κ=0.46. The authors concluded that their findings suggest that routine clinical ICC and IHC evaluations of predictive biomarkers produce discordant results. Consequently, basing therapeutic decisions on cytology with cutoffs defined for IHC poses a risk that patients will receive suboptimal therapy. However, this analysis shows that local adjustments to biomarker cutoff levels may improve congruency and increase the probability of generating correct classifications.

Stalhammar G, Rosin G, Fredriksson I, et al. Low concordance of biomarkers in histopathological and cytological material from breast cancer. *Histopathology.* 2014;64:971–980.

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