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High-Grade Angiosarcoma Masquerading As A Simple Cyst and Histiocytic/Dendritic Cell Neoplasm With Histiocyte-Like Cells—A Diagnostic Conundrum

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Objectives: High-grade, poorly differentiated angiosarcoma is a rare, aggressive malignant neoplasm, comprising 1%-2% of head and neck sarcomas. Diagnosis is often delayed, due to its putatively innocuous clinical appearance combined with the unusual morphology. We report here a case of high-grade angiosarcoma in an elderly patient mimicking clinically and radiologically a benign cyst, and histiocyte-like cells on the morphology.

Methods: The specimen was fixed in 10% buffered formalin solution and embedded in paraffin using routine procedures. Dewaxed paraffin sections were stained with hematoxylin and eosin. Immunoperoxidase stains were performed on the deparaffinized sections using an avidin-biotin-peroxidase complex.

Results: The surgical biopsy revealed histiocytic-like cells characterized by medium to large round nuclei, vesicular chromatin, small nucleoli, abundant eosinophilic cytoplasm, and ill-defined cell borders. These cells are intermixed with chronic inflammatory cells and surrounded by the peripheral cuff of lymphoid cells. Rare multinucleated and multilobulated cells were also identified. No vasoformative structures were identified. On the basis of histomorphology alone, a follicular dendritic sarcoma or other histiocytic sarcoma was considered; however, immunohistochemical stains (CD35, CD23, CD21) were negative in the malignant population, as were the melanoma markers (S100, HMB-45, SOX10, and Melan A) and epithelial markers (EMA, AE1/AE3, CK5/6, CK8/18, and p40); B- and T-cell markers stained only admixed mature lymphocytes. In contrast to these negative results, immunohistochemical studies provided compelling evidence of endothelial differentiation showing positive expression of numerous vascular markers, including CD31, CD34, D2-40, ERG, and factor VIII. A diagnosis of poorly differentiated angiosarcoma was rendered.

Conclusion: High-grade, poorly differentiated angiosarcoma has dismal prognosis with high risk of recurrences. Knowledge of its atypical clinical and radiological presentation, as well as awareness of its unusual morphology of histiocyte-like cells can lead to the early diagnosis and prompt treatment.

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Improving the Quality of Bone Marrow Biopsy in a Pediatric Hospital

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Objectives: Bone marrow aspirate and biopsy is a common procedure for the initial evaluation or follow-up of children with hematologic disorders or for disease staging for patients with solid tumors. Obtaining quality bone marrow aspirate samples with adequate spicules and proper handling of the specimens is important for diagnosis and ancillary testing, especially important to obtain non-hemodiluted aspirate for minimal residual disease study. We implemented a process that has improved the quality of the procedure.

Methods: In our large volume program, with > 400 new pediatric oncology cases annually, there is heterogeneity of bedside providers performing procedures. Our lab partnered with the clinical team to provide a bedside marrow service to ensure real time feedback to ensure spiculated bone marrow aspirates are obtained. We developed a new institutional protocol for collection and handling of specimens based on International Council for Standardization in Haematology guidelines and needed testing for each diagnostic group. In addition we provided training to the lab staff and clinical providers to evaluate in real time for spicules. Performance metrics have been established and are reviewed regularly to address barriers and challenges.

Results: In the first year of implementation, bedside marrow assist was available in 547 cases. The quality of the bone marrow biopsies as judged by the rate of spiculated bone marrow aspirates has improved significantly. Spicules noted on microscopic review have increased from less than 50% pre-implementation to average more than 80% in the initial year after implementation of the procedure.

Conclusion: Providing bedside bone marrow quality assessment has been valuable in improving the quality of specimens. Additional value in other areas, include sample flow into a functional biorepository, providing the assistance in trainees in performing the procedure, opportunities to improve other quality measures such as clotted marrow, quality of chromosome analysis, and improving the accuracy of test ordering.

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Application of Lean Six Sigma Methodologies in the Laboratory to Drive a Reduction in Corrected Reports

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Introduction: A 750-bed hospital laboratory was facing challenges meeting their quality metric goal for corrected reports. This problem led to a process improvement (PI) being implemented, which consisted of the application of Lean Six Sigma methodologies. Prior to the PI, the
laboratory was averaging about 20.47 corrected reports per month for the prior 16 months. The laboratory goal was to have 16 or fewer corrected report occurrences per month. Aside from the number of corrected report occurrences, this laboratory was experiencing growth of 10.98% in resulting revenue generated test (RGT) volume year over year which would further challenge the laboratory in meeting their stated corrected report goal. The focus on corrected reports is an important quality metric because as the number of occurrences is reduced, the possibility of a negative impact on patient care and additional work in the laboratory being needed are also reduced.

Methods: The PI methodology utilized to kick off our engagement was an occurrence tracking review with applied root cause analysis. Occurrence tracking data were collected from the five months prior to the engagement, which allowed us to retrospectively go back and apply root cause analysis to the available data. Through the application of these methodologies, the team was able to brainstorm ideas that could be piloted in the laboratory.

Conclusion: This laboratory was able to obtain an overall reduction of corrected reports by 32% for the seven months following the PI implementation. In conclusion, it is recommended that all quality metrics focus on occurrence tracking and root cause analysis for each error that presents. It is through these tools that we can take a proactive approach in having information readily available in order to determine where to focus PI engagements to reduce errors.

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High Risk Subset of Grade 1 Endometrioid Endometrial Adenocarcinomas Associated With Aggressive Behavior
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Background: Conventional low-grade endometrioid endometrial adenocarcinomas have been associated with lower risk of cervical and adnexal involvement and extraperitoneal spread, and therefore lower stage at diagnosis. Most type 1, grade 1 endometrioid adenocarcinomas are PTEN deleted, express estrogen and progesterone receptors, and are p53 intact, which portends a better prognosis. However, difficulties arise both in its diagnostic accuracy and reproducibility when compared to the conventional grade 1 endometrioid adenocarcinoma.

Methodology: In our retrospective analysis, we examined 220 cases of type 1, grade 1 endometrioid endometrial adenocarcinomas (n = 220). Each case was reviewed with the pertinent H&E and immunohistochemistry, and the evaluated parameters included age of the patient, size of tumor, percent of myometrial involvement, angiolymphatic invasion, cervical involvement, expression of ER, PR, p53, PTEN, and MSI, lymph node involvement, and pathologic stage.

Results: Out of the 200 cases, 186 shared the conventional immunophenotype, and 34 shared a variant immunophenotype characterized by loss of progesterone (23 cases, 67.6%), p53 mutation (16 cases, 47.1%), or PTEN wild type (five cases, 14.7%). The 34 variant cases of type 1, grade 1 endometrioid endometrial adenocarcinoma were associated with cervical involvement, extraperitoneal spread (eight cases, 23.5%, P = .031) and lymph node metastasis.

Conclusion: There is a subset “variant” of grade 1 endometrioid endometrial adenocarcinomas that expresses a different immunophenotype compared to the conventional type. These variant grade 1 endometrioid adenocarcinomas that have loss of progesterone, p53 mutated, PTEN wild type are associated with a high-risk biology and portend a more aggressive clinical course when compared to the conventional grade 1 endometrioid adenocarcinoma. The aggressive nature of the variant grade 1 endometrioid adenocarcinoma is independent of percent of myometrial invasion. Based on these findings, it is recommended to treat these variants of grade 1 endometrioid endometrial adenocarcinomas similar to grade 3 endometrioid adenocarcinoma and due to their aggressive biology and risks of extraperitoneal spread, lymph node involvement, and higher stage at diagnosis to perform pelvic lymphadenectomy and stage them similar to the high grades. Management should not depend on percent of myometrial involvement due to the present finding of extraperitoneal disease in cases with less than 50% of myometrial involvement.