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integrated cameras on microscopes is the mean for whole slide images (WSI) collection. Image processing refers to AI/DL spoon-feeding with accurate, diverse and highly-dissimilar materials for learning. This requires providing hundreds of thousands examples of (a) WSI context correction for stain and resolution normalization, (b) cellular dimensions on the WSI patches for detection, (c) cellular segmentation/boundaries determination for counting (d) cellular labels for classification. Comparing with the confirmatory testing results including flow cytometry and immunohistochemistry is essential in both image processing and validation. Currently, image processing resembles 80-90% of the AI/DL cycle/pipeline which may take years of hectic work. Our proposed developed tool enables the Hematopathologists to use pens and draw on the boundaries of each cell in a field/patch. 3-15 seconds are needed for each cell. The required ground truth/masks for segmentation and dimensions for detection are generated in real-time with no need for data scientists.

Results (if a Case Study enter NA): NA

Conclusion: Similar to the automated agile development-operation loop concept (DevOps), enabling the Hematopathologists to perform image processing directly will reduce the production cycles from years to weeks. No technology can perform qualitatively better than the human eyes, the proposed pen-based cell detection and segmentation tool results in 10-50 fold increase in quality and quantity. Promisingly, there is a trend among the AI/DL platforms companies to automate the AI/DL coding.

Concurrent JAK2 V617F Acute Myeloid Leukemia (AML) and Leukemic non-nodal Mantle Cell Lymphoma (LN-MCL): Case study

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Introduction/Objective: We report a unique case of concurrently occurring Acute Myeloid Leukemia (AML) and Leukemic non-nodal Mantle Cell Lymphoma (LN-MCL) in an 86-year-old male. To the best of our knowledge, this is the first report of AML occurring in the background of LN-MCL, with no known history of any malignancy or chemotherapy.

Methods/Case Report: An 86-year old Caucasian male with unremarkable past medical history presented with pancytopenia, fatigue and generalized weakness. Abdominal CT scan was negative for lymphadenopathy or hepatosplenomegaly. Peripheral blood showed 2% blasts with atypical lymphocytes 89%. Bone marrow aspirate showed 30% myeloblasts expressing CD34, CD117, CD13, CD33, HLA-DR and CD56 (dim) by flow cytometry (FC). Lymphocytes accounted for 40% of bone marrow cellularity. FC identified a population of CD5+ kappa restricted clonal B cells 2%, consistent with a concurrent CD5+ B-lymphoproliferative disorder/lymphoma. The bone marrow biopsy was inadequate for further evaluation of the B- cell lymphoma. Chromosomal analysis revealed a normal male karyotype. FISH analysis was positive for t(11:14) CCND1::IGH rearrangement (in 3.5% of interphase cells) supporting involvement by MCL. Myeloid panel next generation sequencing (51 genes) was positive for JAK2 V617F (VAF, 38%) and ASXL1 P920Tfs*4 (VAF, 22%) variants

Results (if a Case Study enter NA): NA

Conclusion: Concurrent presence of LN-MCL and AML as seen in our patient in the absence of prior history of malignancy or chemotherapy is rare. Presence of JAK2V617F mutation in de-novo AML is extremely rare (<5%). There is no prior history of myeloproliferative neoplasm (MPN) or CBC data to suggest that this may have progressed from an MPN. While the absence of lymphadenopathy suggests that the CD5+ B-LPD likely represents LN-MCL, it is also likely that the CD5+, IgH/CCND1 rearranged B-cells may represent prior undetected circulating cells without overt LN-MCL development, similar to those reported in otherwise healthy individuals. It is unclear but tempting to speculate that the two co-occurring hematologic malignancies may have a common cell of origin

BTEX (benzene, toluene, ethylbenzene, and xylene) and risk of cancer - a study from Centers for Disease Control and Prevention's National Health and Nutrition Examination Survey

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Introduction/Objective: BTEX (benzene, toluene, ethylbenzene, and xylene) is well know for its toxicity via through environmental, occupational and recreational exposures. However, there is limited literature about the carcinogenic effect of BTEX. Hence, we aim to study the prevalence and association of cancer amongst individuals with exposure of BTEX.

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