Comparing Efficacy of Low Dose Cytoreduction and Manual Exchange Blood Transfusion in Managing Hyperleukocytosis: A Case Report

Article *in* American Journal of Clinical Pathology · September 2019

DOI: 10.1093/ajcp/aqz121.025

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CD5, CD56, and CD30. The immunophenotype confirms the entity that we have at hand in addition to the similar clinical picture that the patient presented with. This disease usually shows clonal TR gene rearrangements; nonetheless, no specific mutational aberration has been described. Our patient received chemotherapy; however, new lesions continued to erupt and he opted to proceed with palliative care. Clinical information is needed to give this diagnosis as it may look identical to a variant of lymphomatoid papulosis (type D), CD8-positive cutaneous T-cell lymphoma. We present this case due to the importance of clinical pathologic coloration to prevent misdiagnosis with mimickers as the ones pointed out earlier, and it is a provisional rare entity in the 2018 WHO classification of Tumors of Haematopoietic and Lymphoid Tissues.

Primary Dural Lymphoma Masquerading as a Meningioma: A Rare Clinical Entity

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Primary dura mater–based lymphomas are extremely uncommon and when detected are often clinically and radiologically misidentified. As per literature search, they account for <0.1% of all non-Hodgkin lymphomas; however, a precise incidence is unknown since only a few cases have been described in the literature.

Here we report a case of a 64-year-old female who presented for evaluation of a newly diagnosed left tentorial tumor, diagnosed as "consistent with meningioma" on imaging studies with significant mass effect on the left occipital lobe and left cerebellum with effacement of the fourth ventricle. She had been experiencing disabling headaches, balance dysfunction, and reduced vision. On examination, the patient had right visual field defect with wide-based gait. No evidence of systemic lymphoma or clinically suspicious lymphadenopathy was documented. An intraoperative consultation revealed sheets of lymphocytes, rather highly concerning for lymphoma. H&E sections showed dense fibroconnective tissue heavily infiltrated by mature small- to intermediate-sized lymphocytes with irregular nuclei and condensed chromatin without a discernible architecture. Only sparse and scattered larger lymphocytes were seen. Flow cytometry identified a subset of B cells with lambda-restricted immunophenotype expressing CD19+, CD20+, CD10+, CD5–, and CD23–. On tissue sections, Ki-67 showed an overall proliferation index of 10% to 20%. However, no residual follicular dendritic cell meshwork was detected by CD21 or CD23. PCR analysis detected clonal B-cell *IgH* and *IgKappa* gene rearrangements. A diagnosis of low-grade CD10-positive B-cell lymphoma (likely follicle center-cell origin) was made and the patient was discharged after 3 days of surgery for outpatient follow-up and treatment.

In conclusion, low-grade dural-based lymphomas are extremely rare and often misdiagnosed as meningiomas clinically and radiologically. Additionally, it is important distinguish lymphomas of the dura mater, which are excluded from the definition of primary CNS lymphomas and may have a different clinical management and outcome.

Evaluation of a 42-Gene Next-Generation Sequencing Panel for Detection of Acute Myeloid Leukemia Mutations for Clinical Use

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Objectives: Identification of genetic alterations by molecular and cytogenetic testing has an important role in the classification, risk stratification, and management of acute myeloid leukemia (AML). We evaluated a next-generation sequencing (NGS) panel that assesses *IDH2*, *FLT3*, *NPM1*, and *TP3* and 38 other genes associated with diagnostic, prognostic, and/or therapeutic utility in AML, with a turnaround time of 8 to 14 days, using a DNA input of 50 ng.

Methods: In total, 110 patients, 65 males and 45 females, at a median age of 58 years (range: 2-68 years) with clinical diagnosis of AML were included in this study. Targeted regions were captured by hybridization with complementary biotinylated DNA baits, and NGS was performed on an Illumina NextSeq500 instrument. Sequence reads were analyzed using a bioinformatics pipeline that was developed in house. Analytical sensitivity of the assay is ~5% mutated alleles with 100% specificity.

Results: A total of 296 pathogenic mutations in 38 genes were detected in 95 of 110 samples (86%). On average, three mutations (range 1-10) were detected per positive sample. Variant frequency ranged from 3.0% to 96.1%. Most frequently mutated genes were *TET2* (18.2%), *FLT3* (18.2%), *TP53* (17.3%), *RUNX1* (15.5%), *NPM1* (14.5%), *ASXL1* (12.7%), *NRAS* (11.8%), and *CEBPA* (10.9%). In total, 166 of 296 (56%) mutations from 13 genes had prognostic significance, 42 of 296 (14%) mutations from three genes (*CEBPA*, *NPM1*, *RUNX1*) had diagnostic significance, and 40 of 296 (14%) mutations from three genes (*IDH1*, *IDH2*, *FLT3*) had therapeutic significance.

Conclusion: This focused 42-gene targeted panel identifies mutations of clinical significance in over 85% of patients with a clinical diagnosis of AML.

Comparing Efficacy of Low Dose Cytoreduction and Manual Exchange Blood Transfusion in Managing Hyperleukocytosis: A Case Report

DOI: 10.1093/ajcp/aqz121

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Objectives: Hyperleukocytosis is defined as white cell count greater than 100,000 cells/mm^3. Symptomatic hyperleukocytosis (leukostasis) is a medical emergency and can complicate hematological malignancies. It is commoner in myeloid leukemia but can occur in extremely high-count lymphoid leukemia causing tumor lysis syndrome and death. Immediate management is hydration, cytoreduction, and leukapheresis. In a developing country without leukapheresis, how effective is manual exchange blood transfusion compared to low-dose cytoreduction? We present a case of chronic lymphocytic leukemia with severe hyperleukocytosis, comparing response to different treatment modalities in the absence of leukapheresis.
Case Summary: A 57-year-old woman with complaints of a vaginal protrusion and an incidental finding of a splenomegaly with moderate anemia. Hemogram showed a white cell count of 301,000 cells/mm^3, and blood film revealed a chronic lymphocytic leukemia. She had two cycles of cyclophosphamide, vincristine, and prednisolone and presented 8 months later with worsening leukocytosis of 697,000 cells/mm^3, severe anemia, dizziness, headaches, fatigue, and hyperkalemia. Two manual exchange blood transfusions insignificantly decreased count by 40,000 cells/mm^3 with slight reduction of hyperkalemia. She had low-dose cytoreduction with weekly vincristine and prednisolone. White cell count reduced from 653,000 cells/mm^3 to 467,000 cells/mm^3 with normal electrolytes. She was then commenced on cyclophosphamide, mini-hydroxorubicin, vincristine, and prednisolone. There was a steady decline in counts with improvement in hematological parameters and overall well-being.
Conclusion: Due to nonavailability of leukapheresis, we attempted a manual exchange without a significant decrease in white cell count. However, with low-dose cytoreduction, there was a considerable decrease in white blood cell count and improvement of electrolyte with no tumor lysis syndrome, and it was more affordable. Therefore, in a resource-poor setting, using low-dose cytoreduction might be cheaper, safer, and more effective than exchange blood transfusion in managing hyperleukocytosis.

Familial Platelet Disorder/Predisposition to Acute Myeloid Leukemia With Germline RUNX1 Mutation Masquerading as Idiopathic Thrombocytopenic Purpura: Case Study

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A 25-year-old female underwent emergent laparoscopic salpingectomy when she presented with an ectopic pregnancy (G1P0). A bone marrow biopsy performed for moderate persistent thrombocytopenia (60-105 K/μL) showed normocellularity, maturing trilineage hematopoiesis, and mildly increased morphologically normal megakaryocytes reported as consistent with idiopathic thrombocytopenic purpura (ITP). However, on further inquiry, the patient stated that her sister, father, paternal aunt, and paternal grandfather have/had low platelets. Her father had been diagnosed with myelodysplasia (MDS). Her paternal grandmother had died of acute myeloid leukemia (AML). Thus, although her marrow morphology revealed no evidence of overt dysplasia and despite her normal karyotypic study, a sample was sent for *RUNX1* sequence analysis. A splice site mutation (c.967 + 2_967 + 5delTAAG) in *RUNX1* was detected and initially interpreted as a somatic mutation. However, given the strong family history of thrombocytopenia and MDS/AML, a sample from her father was also sent for *RUNX1* sequence analysis, and the identical intronic sequence variant in the *RUNX1* gene was detected in him. This confirmed the *RUNX1* mutation to be germline. In the context of autosomal dominant thrombocytopenia in the patient's family, the finding of this variant in the affected patient and her similarly affected father was consistent with a pathogenic role. Since this patient was of reproductive age actively trying to have children, these molecular genetic findings had important implications. She elected to undergo in vitro fertilization in order to choose embryos without the *RUNX1* mutation for implantation. Considering that her father and paternal grandmother developed MDS/AML, and because familial platelet disorder with predisposition to AML appears to show "anticipation," she would require close future monitoring for blastic transformation. This case illustrates the significance of careful history taking and high suspicion index that can lead to simplified targeted cost-effective molecular testing resulting in the correct diagnosis without necessarily employing large gene panels.

Hemoglobin Phenotypes in Nigeria: Data From a National Reference Laboratory

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On a global scale, 5% to 7% of the population carries an abnormal hemoglobin. With a sickle hemoglobin (HbS) carrier prevalence of 25% to 40%, Nigeria bears the greatest burden of sickle cell disorder worldwide. Until recent times, detection of other clinically significant hemoglobin variants associated with HbS has been unavailable,

DOI: 10.1093/ajcp/aqz121