

comparison between karyotyping analysis and immunophenotyping classification revealed the absence of metaphases (UC) in specific neoplasia types: 3 samples (2.7%) out of 88 AML cases, 1 sample out of 39 MDS cases, 1 sample out of 67 myeloma cases, 1 sample out of 15 lymphoproliferative disease cases, and 2 samples (1.8%) out of 69 cases for measurable residual disease investigation. However, successful cytogenetics were obtained in all 39 cases of acute lymphoblastic leukemia and 33 cases of myeloproliferative disease. Four cases (3.52%) out of 204 normal bone marrow samples showed UC results. **Discussion:** The data indicates that the implementation of a ROLF for cytogenetics and immunophenotyping improves efficiency in achieving accurate diagnoses, with a high percentage of successful cytogenetic results (98%) when compared to previously published results in Brazil and Europe. The low rate of UC and the identification of karyotypic alterations in a significant number of cases highlight the reliability and improvement in cell culture techniques and the identification of clonal lineages, leading to reliable results in understanding and managing each diagnostic approach. **Conclusion:** Our remote laboratory for immunophenotyping, molecular biology, and cytogenetics has demonstrated excellent technical performance and operational efficiency. These results support the effectiveness of remote support in providing accurate and timely diagnoses for hematological malignancies, contributing to improved patient care and outcomes.

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UNRAVELING RARE CASES IN ACUTE MYELOID LEUKEMIAS: THE SIGNIFICANCE OF SPECIALIZED REMOTE LABORATORIES IN HEMATOLOGICAL DIAGNOSIS

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Introduction: The diagnosis of onco-hematologic conditions in medical and hospital settings typically involves relying on centralized reference laboratories for investigative and clinical-laboratory diagnostic support. However, Flow Diagnostics is a specialized remote laboratory in oncology-hematology that has implemented a unique approach utilizing reflex testing methodology and real-time medical advisory services for all partnering facilities. **Methods and results:** Between January and May 2023, our remote oncology-hematology laboratory conducted immunophenotyping investigations using flow cytometry on 1862 cases. Among these, 1378 (75%) cases were aimed at investigating or diagnosing hematological diseases, while 474 (25%) cases were dedicated to measurable residual disease research. Among the 1378 cases subjected to immunophenotyping, we diagnosed 154 cases of acute myeloid leukemia (AML), including 18 (11.7%) cases identified as acute promyelocytic leukemia (APL) within the AML cohort. One particular APL case drew significant attention: a 31-year-old male patient presenting with a history of anemia and gum bleeding. The analysis of the complete blood count

revealed severe pancytopenia (hemoglobin: 6 g/dL; WBC: 39,600 with 90% blast-like cells; platelets: 26,000/mm³), alongside a history of repeated blood transfusions. The patient experienced respiratory decompensation. Immunophenotyping analysis conducted via flow cytometry identified cells exhibiting moderate CD45 expression and moderate-to-high internal complexity. These cells accounted for 85.8% of the total analyzed cells, representing the blasts, and displayed the following positive phenotype for the markers: CD2 (weak), CD13 (heterogeneous), CD33 (strong, homogeneous), CD34 (moderate), CD45 (moderate), CD64 (moderate), CD117 (weak), and cMPO (strong). The cells were negative for CD4, CD11b, CD14, CD15, CD16, CD56, CD123, and HLA-DR. To further support the laboratory investigation, our reflex testing algorithm included qualitative detection of PML-RARA transcripts, prompting the medical advisory team to seek authorization from the clinical medical staff for performing the molecular biology test. Real-time PCR analysis confirmed the presence of the PML-RARA BCR3 transcript, indicating a positive result. The presence of the PML-RARA BCR3 transcript, in conjunction with weakly positive CD2 and moderately positive CD34 markers, is consistent with microgranular APL. **Conclusions:** This aforementioned case serves as a proof of concept for the value added by specialized remote laboratories, automated reflex testing methods, and real-time medical advisory services in the field of oncology-hematology. This approach enables the identification of rare and specific cases, such as CD34 + APL, reduces the turnaround time between investigative procedures and laboratory diagnosis, and ultimately decreases the overall cost of the diagnostic process.

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CONSULTORIA EM HEMATOLOGIA, UM PROJETO DE EXTENSÃO UNIVERSITÁRIA

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Consultoria em Hematologia é um projeto de extensão universitária que consiste em oferecer assessoria para médicos que atuam em outras especialidades e discentes do curso de medicina. As doenças hematológicas consistem num grupo heterogêneo de distúrbios de gravidade e frequência variável que atingem a população em seus diferentes ciclos de vida. Os problemas mais comuns atendidos por serviços de atenção primária são as anemias, mas outras alterações também são frequentes, podendo suscitar preocupação de médicos e pacientes, resultando na necessidade de uma avaliação especializada. As leucopenias são um exemplo importante, bem como demais citopenias detectadas nos hemogramas. Outra situação frequente é a presença de anormalidades em exames laboratoriais sem que necessariamente haja uma justificativa clínica para tal. Alterações de exames da coagulação, nem sempre significam doenças hematológicas. Além disso, algumas doenças não-hematológicas, como infecções e o uso de determinados medicamentos podem causar alterações laboratoriais, gerando confusão no diagnóstico. Além dessas