

## **Abstract:**

Over the past few decades, the classification and sub classification of acute leukaemias have revolutionized. Immunophenotyping based on flow cytometry has become an important supplementary test in diagnosis of acute leukaemias which determines management plan and prognosis of the patient. Nevertheless, in resource poor settings such as in Sri Lanka, there are occasions where the diagnosis and subsequent management is planned depending on morphology and cytochemistry.

The aim of the study was to assess the correlation of the morphological diagnosis with flow cytometry-based diagnosis of acute myeloid leukaemia and acute lymphoblastic leukaemia. The correlation of the cytochemical stain, Sudan Black B(SBB) with the flow cytometry immunophenotypic marker, Myeloperoxidase (MPO) was also assessed in the study.

In this study , 66 cases of acute leukaemia are analyzed and it was found that there is a strong correlation between the blast percentage determined by morphology and flow cytometry with a correlation coefficient of 0.814. There was a strong correlation between the morphological diagnosis and flow cytometry diagnosis of acute myeloid leukaemia and acute lymphoblastic leukaemia with correlation coefficients of 0.674 and 0.715 respectively. The SBB positivity in cytochemistry showed a significant correlation with the MPO positivity in flow cytometer with a correlation coefficient of 0.779 , which was also a significant correlation.

In acute leukaemia diagnosis and blasts enumeration, morphological findings are strongly correlated with flow cytometry findings. Sudan black B cytochemistry has a significant correlation with MPO immunophenotypic marker in flow cytometry. It can be concluded that morphology and cytochemistry can reliably be utilized in set -ups where flow cytometry facility is not available. However, it can also be recommended to use flow cytometer for every possible diagnostic procedure as there are rare instances where morphology and cytochemistry would mislead the exact diagnosis.