

Thesis Title Systematic Classification of Acute Leukemia
Using Morphologic Immunologic and Chromosome
Studies.

Name Sumana Karimee

Degree Master of Science (Medical Technology)

Thesis Supervisory Committee

Pimpawan Patmasiriwat, Ph.D.

Vinai Suvatte, M.D., MSc., Ph.D.

Tasanee Lebnark, M.D.

Surapol Issaragrisil, M.D.

Kovit Pattanapanyasat, Ph.D.

Date of Graduation 24 September B.E. 2536 (1993)

ABSTRACT

Multiple characteristics of leukemic cell were studied in 56 patients with acute leukemia. These characteristics are morphology, cytochemistry, immunology and chromosome abnormality. The study purposes are to use these characteristics in the classification of the disease and to substantiate the relationships between these characteristics.

Results from the studies in 23 patients with acute lymphoblastic leukemia (ALL) revealed that immunological characteristic could be used in subclassification of ALL. The immunological subtypes in this study were of pro-B-ALL in 1 case, C-ALL in 4 cases, pre-B-ALL in 6 cases, T-ALL in 7 cases, mixed

lineage-ALL in 2 cases. The remaining 3 cases exhibited C-ALL or pre-B-ALL (HLA-DR+,D10+,CD7-,and Cu is not available). Most of pre-B-ALL (5/6) showed morphological characteristic of L1 whereas another pre-B-ALL showed L2 morphology. The particular L2/pre-B-ALL in this study exhibited higher level of WBC count ($164.4 \times 10^9/l$) and worse clinical outcome as compared with L1/Pre-B-ALL. Patients with C-ALL and T-ALL showed the morphological characteristic of L1 and L2 in the same proportion. Cytogenetic analyses were successful in 11 ALL patients. Abnormal karyotypes were found in 81.8% (9/11). The aberration were of hyperdiploid in 4 cases and pseudodiploid in 5 cases. None of the specific chromosome abnormalities were observed in our ALL patients.

Results from the studies in 33 patients with acute myelogenous leukemia revealed that the use of myeloid markers help confirmation in diagnosis of AML. The immunological characteristic using only CD15 (maturing myeloid specific marker) were performed in 17 cases. It was expressed in 14 cases. A panels of markers include CD15, CD33, CD33, and CD14 were performed in the other 12 AML cases. ALL of 12 cases could be diagnosed by these markers. Furthermore, CD14 which is monocytic specific marker could differentiate all monocytic leukemia (M4 and M5) from other AML subtypes. Cytogenetic analyses were successful in 23 AML patients. Abnormal karyotypes were observed in 82.6% (19/23). The major aberration was abnormality of chromosome 16-long-arm followed by abnormality of chromosome 11-short-arm. Type specific chromosome abnormalities were found; t(8;21) in M2 subtype and t(15;17) in M3 subtype. The use of cytogenetic helps confirmation in diagnosis of AML.