LEUKEMIA OF THE MEGAKARYOCYTE LINEAGE

An Essay

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By

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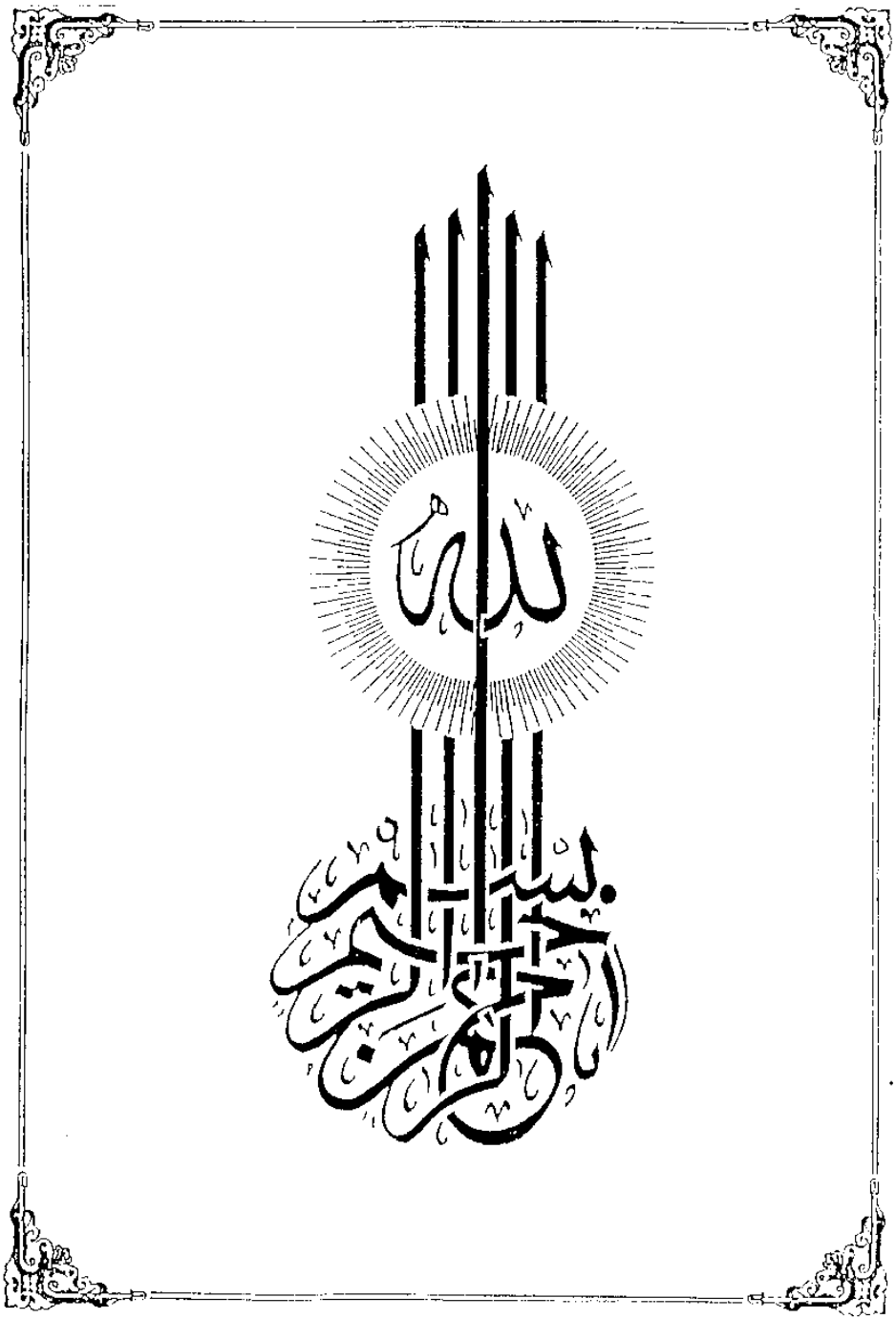

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TO

MY FAMILY

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CONTENTS

LIST OF ABBREVIATIONS

6-MP;MP	6-Mercaptopurine
6-TG;TG	6-Thioguanine
acP	Acid phosphatase
AMKL	Acute megakaryoblastic leukemia
AMOL	Acute monocytic leukemia
ANAE	α-naphthol acetate esterase
ANBE	α-naphthol butyrate esterase
ANLLs	Acute non lymphocytic leukemias
APAAP	Alkaline phosphatase anti-alkaline phosphatase
Ara-C;cytarabine	Cytosine arabinoside
BM	Bone marrow
CGL	Chronic granulocytic leukemia
C-sis	The cellular part to the transforming gene V-sis of Simian sarcoma virus
del	Deletion
der	Derangement
dir ins	Direct insertion
DNA	Desoxy Ribonucleic acid
DNR	Daunorubicin
EM	Electron microscopy
FAB	French-American-British group of workers
Fc	Fraction crystalline
gp	Glycoprotein
HLA-DR	Human lymphocyte antigen-D related
IF	Immunofluorescence
IgG	Immunoglobulin G

Inv	Inversion
I.V.	Intravenous
m-AMSA	Amsacrine
mar	Marker chromosome
McAbs	Monoclonal antibodies
MDs	Myelodysplastic syndrome
Micro-MK	Micromegakaryocyte
MKs	Megakaryocyte s)
MPD	Myeloproliferative disorder
M-POX	Myeloperoxidase
mRNA	Messenger Ribonucleic acid
P	Short arm of the chromosome
PAS	Periodic Acid Schiff
PB	Peripheral blood
PDGF	Platelet-derived growth factor
PF_4	Platelet factor 4
PMKB	Promegakaryoblast
P.O.	Per os oral
P-POX	Platelet peroxidase
Q	Long arm of the chromosome
r	Ring
SBB	Sudan Black-B
S.C.	Subcutaneous
t	Translocation
TGF-beta	Transforming growth factor beta
TMD	Transient myeloproliferative disorder
VP-16: Etoposide	Epipodophyllotoxin

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Leukemia of the megakaryocytic lineage has been first described by Von Boros and Korenyi (1931). Thereafter, minor attention have been paid to it, due to insufficient morphological and cytochemical characteristics on routine studies. Rare case reports have been published under various nominations. Recently, however, it has proved to be more common than previously recognized, both in adults and in children (Hirt et al., 1990).

This type of leukemia often arises secondary, as blast crises of chronic granulocytic leukemia (CGL) or following chemotherapy for solid tumors. It may also present as congenital leukemia, most commonly associating the Down's syndrome (Erber et al., 1987 ; Windebank et al., 1989).

Clinical and histopathological findings confirm the heterogeneity of this variety of leukemia. However, the most relevant features of megakaryoblastic leukemia, in general, are: bone marrow (BM) fibrosis, frequent bleeding diathesis, absence of organomegaly, variable platelets count despite

profound anaemia, and/or leukopenia and platelet dysfunction (Pogliani et al., 1989 ; Abaza, 1990).

Morphologically, the blasts of acute megakaryoblastic leukemia (AMKL) are classified as undifferentiated or sometimes as L1/L2/M1 leukemia. Cytochemically, megakaryoblasts can also be considered undifferentiated in the way that they do not stain with Sudan Black B or Myeloperoxidase (Catovsky, 1991).

A malignant megakaryoblastic cell population may be seen alone or with other myelomonocytic cells in some acute non-lymphoblastic leukemias ANLLs (Linnai et al., 1987). The megakaryoblastic nature of the infiltrate should be confirmed by ultrastructural detection of cytoplasmic platelets peroxidase (P-POX) and staining of peripheral blood BM blasts with specific monoclonal antibodies. Moreover, certain clonal chromosomal abnormalities are found in blasts of AMKL (Hayashi et al., 1988).

AMKL often has a short course with bad response to conventional treatment. It is usually fatal within few months.