

[f10.12] This case of AML reveals immunophenotypic features characteristic of monoblastic leukemia. The clinical history demonstrates a 48-year-old male with a history of hepatitis C, abdominal pain, gross hematuria, and leukocytosis, with disseminated intravascular coagulation. The blasts reveal abundant cytoplasm with numerous cytoplasmic vacuoles **a**. The blasts show strong expression of CD15 **b**, **c** with some loss of expression of CD13 **b**, some loss of expression of CD11b **c**, expression of CD33 **d**, lack of expression of CD14 **d**, aberrant expression of CD56 **e**, and strong expression of CD64 **f** and HLA-DR. They are negative for CD34, and CD117 **e**, as well as B-cell and T-cell antigens. The enzyme cytochemical stains are demonstrated in **g** (ANAE), **h** (ANBE), and **i** (CAE). The blasts intensely stain with ANAE and ANBE and show fine granular staining with CAE. The cytogenetic results reveal trisomy 8 and other abnormalities, but no t(15;17). The diagnosis of AML, M5a is made.

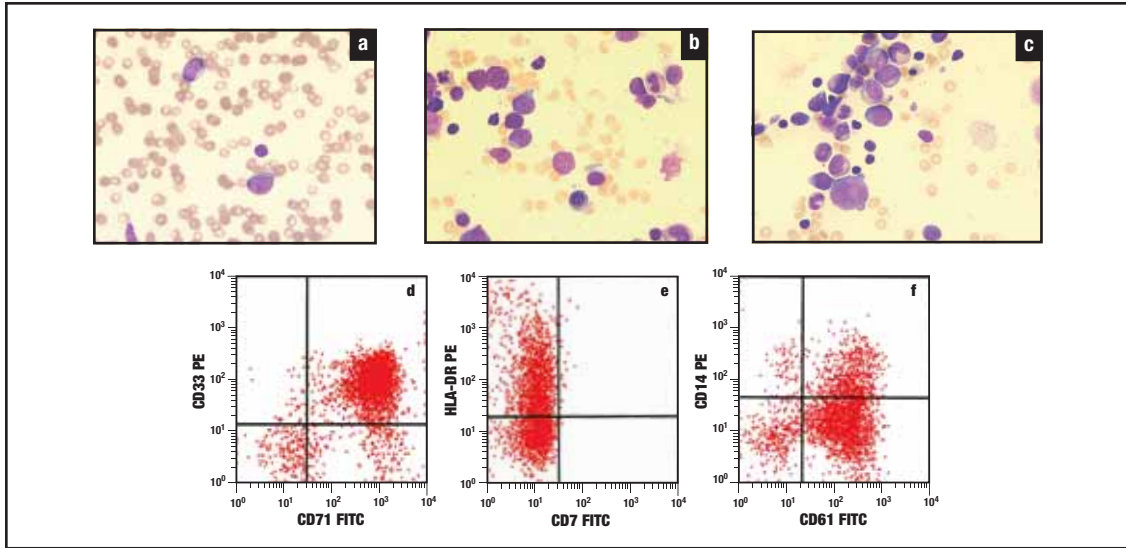
Differentiation of AML with Aberrant Antigen Expression from Acute Leukemias of Ambiguous Lineage (ie, Mixed Lineage and Mixed Phenotype Acute Leukemia) [f10.3]

Flow cytometric analysis is useful in distinguishing AML with aberrant antigen expression from acute leukemias of ambiguous lineage (ie, mixed lineage [f10.15] and mixed phenotype acute leukemias), which generally have a poor prognosis. This distinction is based on a scoring system as demonstrated in [f10.3]. Acute

leukemia of ambiguous lineage is established when the score from 2 separate lineages is each >2 [Anon 1998].

Differentiation between AML with Aberrant CD56 Expression and Myeloid/Natural Killer Cell Precursor Acute Leukemia

AMLs may aberrantly express CD56, and CD56 expression has been described as a fairly common finding in M0, M2, M4, and M5 [Reuss-Borst 1992]. Although CD56 expression is more commonly expressed in AMLs



[f10.13] This case of AML, M7 is defined by flow cytometric analysis. The clinical history reveals an 18-month-old female who presents with 12% blasts in the peripheral blood. The blasts have increased nuclear:cytoplasmic ratios with rare cytoplasmic blebs **a-c**. The blasts strongly express CD33 **d** and show heterogeneous expression of HLA-DR **e**. The blasts are negative for CD14 **f**, CD34, CD64, CD117, and CD13, as well as T-cell and B-cell antigens. They strongly express CD61 **f**. The diagnosis acute megakaryoblastic leukemia, M7 is made.

110.3 Scoring System for the Definition of Acute Leukemias of Ambiguous Lineage

Acute leukemia of ambiguous lineage is established when the score from two separate lineages is each >2.

Score	B-lymphoid	T-lymphoid	Myeloid
2	cCD79a*	cCD3 or sCD3	MPO
	clgM	Anti-TCR	
	cCD22		
1	CD19	CD2	CD117
	CD20	CD5	CD13
	CD10	CD8	CD33
		CD10	CD65
0.5	TdT	TdT	CD14
	CD24	CD7	CD15

c, cytoplasmic; s, surface.

*CD79a may also be expressed in some cases of precursor T lymphoblastic leukemia/lymphoma.

with monocytic differentiation [AMML (67%), and AMoL (100%)], it may be nonspecifically expressed in other AML subtypes, including M0 (15%), M2 (22%), and even APL (17%) [Mann 1997, Dunphy 1999]. CD56 expression has also been described in a unique subtype of AML (CD56+, CD33+, CD13+/-, CD34-

HLA-DR-, CD16-), characterized by a high white blood cell count and marked nuclear foldings with variable cytoplasmic granularity resembling APL-M3v [Scott 1994]. Obviously, this entity would need to be distinguished from a CD56+ APL-M3v by exclusion of a t(15;17). Of interest, the CD56+ AMLs had the