Myelodysplastic Syndrome (MDS)

by
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MDS

- *Disorders of multipotent hemopoietic stem cell*
- *Hemopoietic production defecte and morphological dysplastic changes in (Blood & BM)*
- *Tendency to evolve into acute leukemia*
- *Elderly patients*

FAB

- *Refractory anemia (RA)*
- *Refractory anemia with ring sideroblasts (RARS)*
- *Refractory anemia with excess blast (RAEB)*
- *Refractory anemia with excess blast in transformation (RAEBt)*
- *Chronic myelomonocytic leukemia (CMML)*

Refractory Anemia

- **Peripheral blood**:
- Anemia
- Blast< 1%
- Monocytes < $1 X 10^9 /L$

Bone Marrow:

- Blast < 5%
- Ringed sideroblasts < 15% of erythroblast

RARS

- Peripheral blood:
- Anemia
- Blast < I%
- Monocytes < $1 X 10^9 / L$
- Bone marrow:
- Blast < 5%
- Ringed sideroblasts > 15% of erythroblast

RAEB

- Peripheral blood:
- Anemia
- Monocytes <1 x 10 9
- Blasts > 1% , but < 5%
- Bone marrow:
- Blasts > 5% and/ or < 20%

CMML

- **Peripheral blood:**
- Monocytes > 1 x109
- Blast < 5 %
- **Bone marrow:**
- Blast up to 20%
- Increased of promonocytes

WHO Classification 2008

- *Refractory anemia*
- *Refractory anemia e ringed siderblast*
- *Refractory cytopenia e multilineage dysplasia*
- *Refractory cytopenia e multilineage dysplasia & ringed sideroblasts*
- *Refractory anemia with excess blast-1*
- *Refractory anemia with excess blast-2*
- *Myelodysplastic syndrome unclassified*
- *MDS associated with del (5q)*

WHO classification 2008

Subtype	Blood	Bone Marrow
RA	Anemia	Erythroid dysplasia only
RARS	Anemia	Erythroid dys >15% ringed
RCMD	cytopenia affect more than one linage	>10%Dysp in 2 or more cell lineage
RCMD-RS	Cytopenia affect 2 or 3 linage	>10%Dys 2 or more cell lineage >15% ringed

WHO 2008:

subtype	Blood	Bone Marrow
RAEB-1	Cytopenia <5% blast	Uni/multilinage dysplasia, 5-9%blast
RAEB-2	Cytopenia, 5-19%blast or Auer rods	Uni-multi dys 10-19%blast Or Auer rods
MDS-U	cytopenia	Myeloid or megakaryocte dys
MDS with 5q	Anemia,nor or increased PLT	Mega with hypolobated nuclei, < 5%blast

Etiology

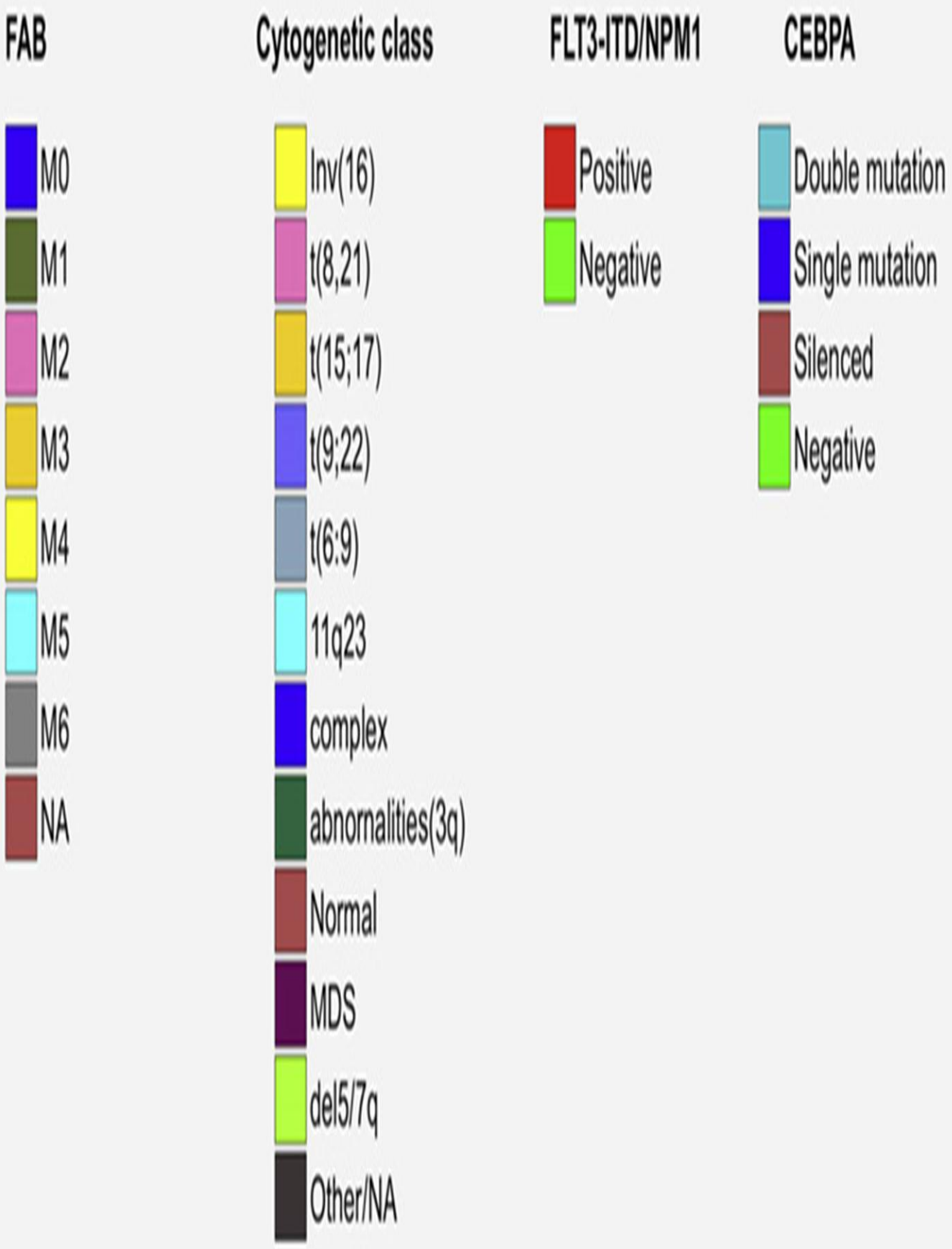
- *Primary → unknown*
- *Case control study shown increased incidence in: smoker, agricultural workers, plant and machine operator, ionizing radiation, organic chemical*
- *Secondary or therapy related MDS*
- *Cytotoxic chemotherapy*
- *Median time is 4-5 years*

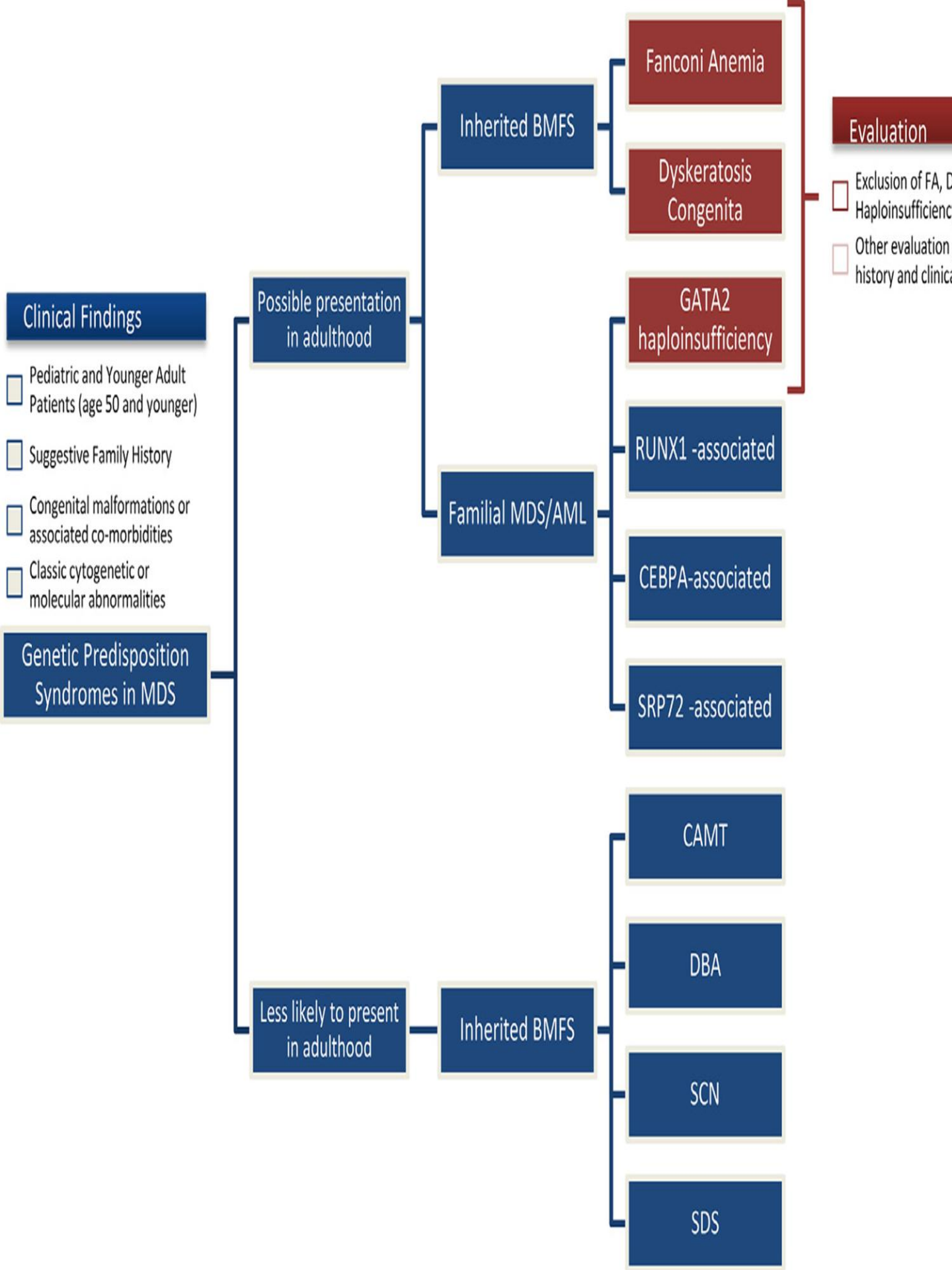
Diagnosis

- **Chromosome analysis**:
- Monosomy 7
- Complex Karyotype
- Karyotypic evolution
- **Molecular Studies**:
- N- RAS mutation
- P53 mutation

Management

1. Observation
2. Supportive care
3. Intensive chemotherapy
4. Allogenic or autologous marrow transplant
5. Cytotoxic therapy
6. Immunosupperessive agents


FAB
M0
M1
M2
M3
M4
M5
M6
NA
Cytogenetic class
Inv(16)
t(8,21)
t(15;17)
t(9;22)
t(6:9)
11q23
complex
abnormalities(3q)
Normal
MDS
del5/7q
Other/NA
FLT3-ITD/NPM1
Positive
Negative
CEBPA
Double mutation
Single mutation
Silenced
Negative


Clinical Findings
Pediatric and Younger Adult Patients (age 50 and younger)
Suggestive Family History
Congenital malformations or associated co-morbidities
Classic cytogenetic or molecular abnormalities
Genetic Predisposition Syndromes in MDS
Possible presentation in adulthood
Inherited BMFS
Fanconi Anemia
Dyskeratosis Congenita
Familial MDS/AML
GATA2 haploinsufficiency
RUNX1 -associated
CEBPA-associated
SRP72 -associated
Less likely to present in adulthood
Inherited BMFS
CAMT
DBA
SCN
SDS
Evaluation
Exclusion of FA, D
Haploinsufficienc
Other evaluation
history and clinica

THANK YOU