Causes of Early Death

Major causes of early death include:

- Hemorrhage
- Infection
- Differentiation syndrome

Preventing differentiation syndrome

- In treatment induction of APL, for patients with a high WBC count >10 x 10^9/L, prophylactic steroids should be initiated to prevent differentiation syndrome. The use of prednisone versus dexamethasone is protocol dependent.

Management of differentiation syndrome

- Initiate dexamethasone at first signs of respiratory compromise. Consider interrupting ATRA therapy until hypoxia resolves.
- If patient develops differentiation syndrome, change prednisone to dexamethasone 10 mg every 12 h until acute differentiation resolves, then return to previous prednisone dose.

The Biology of APL

- Most APL cases (82%) are characterized by a translocation between chromosomes 15 and 17.
- This translocation fuses the RARα gene to the PML gene resulting in a PML/RARα fusion protein.
- Most other APL cases are characterized by fusions of RARα to other genes, or in rare cases, no RARα at all.

Signs and Symptoms of Differentiation Syndrome

- Fever
- Pleural and pericardial effusions
- Hypotension
- Renal and hepatic dysfunction
- Shortness of breath
- Weight gain
- Peripheral edema

These cells are heavily granulated. The granules may obscure fine cellular details like the nuclear-cytoplasmic border.

(Circulating promyelocytes have irregular features including:

- Azurophilic granules
- Auer rods
- Bilobed or reniform nucleus)