



General AML

All-Trans Retinoic Acid in the treatment of APL

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As part of their 70th year anniversary, [Blood](#) are currently featuring flashbacks of key papers from their history, accompanied by new editorials. One of these flashbacks featured the pioneering paper by [Huang *et al.*](#), which was the first to describe the use of All-Trans Retinoic Acid (ATRA) for the treatment of Acute Promyelocytic Leukemia (APL).

In this study, Huang *et al.* incorporated 24 APL patients and treated these patients with ATRA. All patients in this study achieved Complete Remission (CR) without developing marrow aplasia. This outstanding work led to the identification of the unique t(15;17) translocation and the PML-RAR α fusion gene, which are critical for the definitive diagnosis and monitoring of APL. The [AML Global Portal \(AGP\)](#) congratulate Huang *et al.* on their landmark [publication](#) and [Blood](#) on celebrating their 70th anniversary.

Original Huang M *et al.* abstract:

Use of all-trans retinoic acid in the treatment of acute promyelocytic leukemia

Twenty-four patients with acute promyelocytic leukemia (APL) were treated with all-trans retinoic acid (45 to 100 mg/m²/day). Of these, eight cases had been either nonresponsive or resistant to previous chemotherapy; the other 16 cases were previously untreated. All patients attained complete remission without developing bone marrow hypoplasia. Bone marrow suspension cultures were studied in 15 of the 24 patients. Fourteen of these patients had morphological maturation in response to the retinoic acid (1 μ mol/L). Chloroacetate esterase and alpha-naphthyl acetate esterase staining as well as electronmicroscopic examination confirmed that retinoic acid-induced cells differentiated to granulocytes with increased functional maturation (as measured by nitroblue tetrazolium reduction, NBT). The single nonresponder to retinoic acid in vitro was resistant to treatment with retinoic acid but attained complete remission after addition of low-dose cytosine arabinoside (ara-C). During the course of therapy, none of the patients showed any abnormalities in the coagulation parameters we measured, suggesting an absence of any subclinical disseminated intravascular coagulation. The only side effects consisted of mild dryness of the lips and skin, with occasional headaches and digestive symptoms. Eight patients have relapsed after 2 to 5 months of complete remission. The others remain in complete remission at 1+ to 11+ months and are still being followed up. We conclude that all-trans retinoic acid is an effective inducer for attaining complete remission in APL.

References

1. [Huang M.E. *et al.*](#) Use of all-trans retinoic acid in the treatment of acute promyelocytic leukemia. [Blood](#). 1988 Aug; 72(2):567–572.
2. Blood Editors. Blood Flashback Editorial. [Blood](#). 2016; 128:2109. DOI: [10.1182/blood-2016-11-750182](https://doi.org/10.1182/blood-2016-11-750182).

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