

Leukaemia Section

Short Communication

t(17;17)(q21;q21), dup(17)(q12q21)

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Clinics and pathology

Disease

Acute promyelocytic leukaemia (M3-AML)

Note

In one case, a diagnosis of M1-AML was made, but there were some blasts suggestive of a micro-granular variant of acute promyelocytic leukaemia (M3v-AML).

Epidemiology

3 cases to date, 3 male patients aged 42, 57, and 67 years (Arnoud et al., 1999; Kusakabe et al., 2008; and Gallagher et al. (ref 6 in Kusakabe et al., 2008)).

Clinics

Patients exhibited normal WBC, mild anaemia, thrombocytopenia and disseminated intravascular coagulation (DIC) (Kusakabe et al., 2008).

Treatment

One case did not respond to all trans-retinoic acid (ATRA) treatment, but ATRA revealed effective to control DIC, and was therefore continued. In another case, blasts failed to respond to ATRA in vitro.

Prognosis

Data is available in one case: the patient remains in complete remission 21 months after diagnosis.

Cytogenetics

Cytogenetics morphological

Cryptic translocation.

Additional anomalies

-Y in two cases, i(17q) in one case.

Genes involved and proteins

STAT5b

Location

17q21

Protein

Signal transduction (JAK/STAT signaling); Following JAK activation, STAT5B is phosphorylated, forms dimers and activates transcription.

RARA

Location

17q21

Protein

Ligand-dependent transcription factor specifically involved in hematopoietic cells differentiation and maturation. Receptor for all-trans retinoic acid (ATRA) and 9-cis RA. After linking with ATRA, RARA binds with RXR (retinoid X receptor protein) to the RARE domain (retinoic acid response elements), a DNA sequence common to a number of genes.

Result of the chromosomal anomaly

Hybrid gene

Description

5' STAT5B - 3' RARA. Fusion of STAT5B (at exon "n") to exon 3 of RARA. The genes are normally separated by 1.9 Mb on chromosome 17q21; RARA transcription is centromere to telomere, while STAT5B is telomere to centromere. It was therefore presumed that the hybrid gene result from a small inversion (Kusakabe et al., 2008).

Fusion protein

Description

Fusion protein of 1038 amino acids, composed of the NH2 term coiled-coil domain, the DNA binding domain the SH3 and the SH2 from STAT5B, fused to the transactivation domain, the DNA binding domain, the N-CoR box, and the COOH term ligand binding domain and dimerization domain of RARA.

References

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