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Leukaemia Section
Short Communication

t(6;14)(p25.3;q11.2) TRA/IRF4

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Clinics and pathology

Disease

Peripheral T-cell lymphoma, not otherwise specified (PTCL, NOS)

Phenotype/cell stem origin

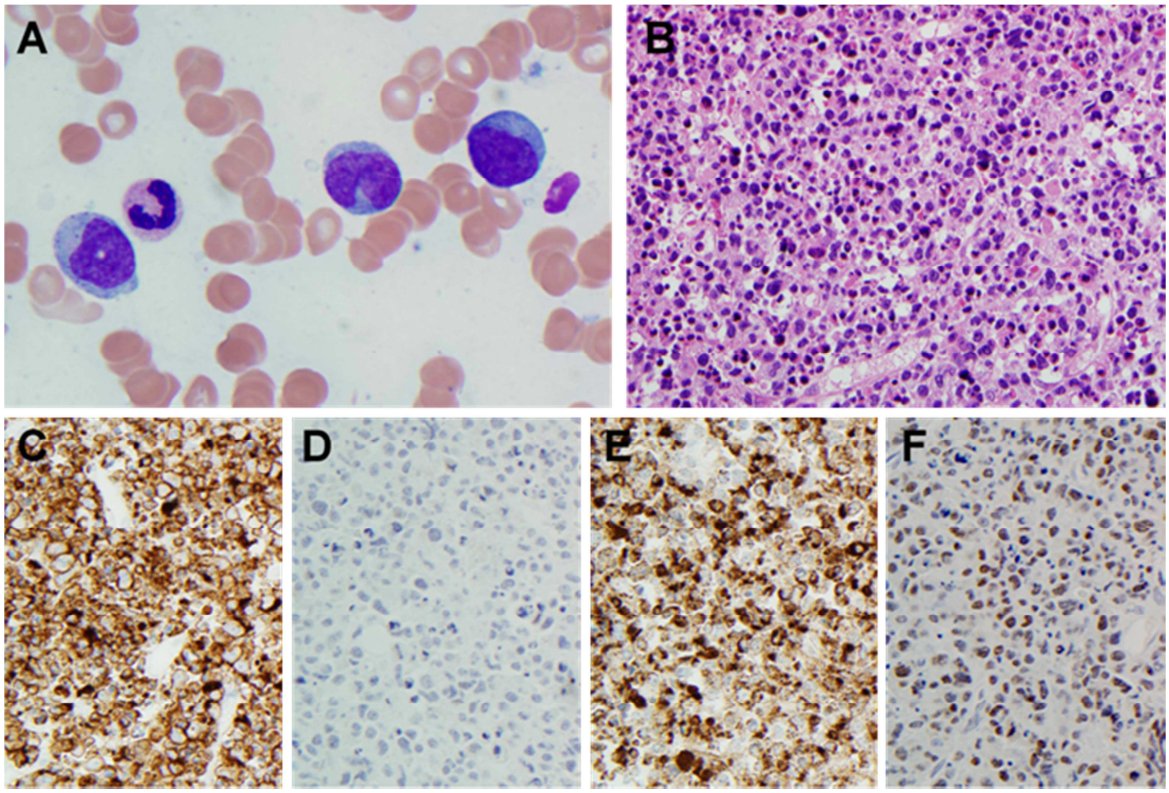
Mature (peripheral) cytotoxic alpha-beta T-cell origin.

Etiology

No etiologic factors are known.

Epidemiology

Adult males (age range, 67-82 years).



(A) Atypical lymphocytes in bone marrow smear from patient with PTCL, NOS with t(6;14)(p25.3;q11.2) (Wright-Giemsa, original magnification x1000). **(B)** Bone marrow trephine biopsy (H&E, x400). Tumor cells are **(C)** positive for CD2, **(D)** negative for CD5, **(E)** positive for granzyme B, and **(F)** positive for nuclear IRF4/MUM1 (x400).

Clinics

Presentation with cytopenias in the absence of lymphadenopathy, sometimes with skin involvement.

Pathology

The bone marrow is hypercellular with the normal marrow elements replaced by an extensive infiltrate of atypical, mostly medium-sized lymphoid cells with irregular nuclear outlines. Admixed plasma cells and a background of reticulin fibrosis are present. The tumor cells display an abnormal T-cell phenotype with expression of CD3, the cytotoxic marker TIA1 (+/- granzyme B), and T-cell receptor-beta (beta-F1), but without coexpression of CD5. Most cases express CD4 and lack expression of CD25 and CD30. IRF4/MUM1 protein is expressed in tumor cell nuclei. Cases tested for EBV by in situ hybridization have been negative.

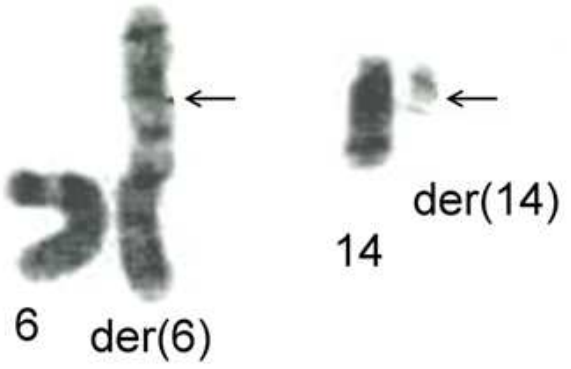
Treatment

No treatment data are available.

Prognosis

The prognosis has not been established.

Cytogenetics



t(6;14)(p25.3;q11.2) [G-banding].

Cytogenetics morphological

The rearrangement can be detected in standard G-banded karyotype.

Cytogenetics molecular

The rearrangement can be detected using dual-fusion fluorescence in situ hybridization with probes to the IRF4 and TCR@ loci.

Genes involved and proteins

Note

The IRF4/MUM1 protein is expressed in cases with t(6;14)(p25.3;q11.2). This expression likely results from the translocation, but this has not been proved.

IRF4

Location

6p25.3

DNA/RNA

Nine-exon gene on 6p25.3.

Protein

The gene encodes interferon regulatory factor-4 (IRF4)/multiple myeloma oncogene-1 (MUM1), a transcription factor in the IRF family. Its expression limited mainly to lymphocytes and is critical in lymphocyte activation.

TRA

Location

14q11.2

Note

Other name: TRA@.

DNA/RNA

~ 1Mb on 14q11.2 containing TCR alpha V, J, and C regions, as well as the TCR-delta locus.

Protein

TRA@ encodes the T-cell receptor-alpha chains, translated from transcripts resulting from rearrangement of the TRAV and TRAJ regions and from TRAC.

Result of the chromosomal anomaly

Hybrid gene

Note

No RNA studies have been reported on cases with t(6;14)(p25.3;q11.2). Most translocations involving TRA@ in T-cell neoplasia do not produce fusion transcripts.

Fusion protein

Note

No studies of potential fusion proteins have been reported on cases with t(6;14)(p25.3;q11.2). Most translocations involving TRA@ in T-cell neoplasia do not produce fusion proteins.

References

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