

## Polyclonal B Lymphocytosis with Binucleated Lymphocytes (PPBL)

### Clinics and Pathology

Phenotype / cell stem origin	Unknown. The polyclonal expansion of B-cells fit into the peripheral CD27+IgM+IgD+ B cell population. Cloning and sequencing of VH genes of PPBL IgVH genes showed a mutated profile suggesting like CD27 expression an expansion of memory B cells.
Etiology	The etiology of polyclonal B lymphocytosis with binucleated lymphocytes (PPBL) remains unknown. An association with cigarette smoking was initially suggested. However PPBL was observed in non smokers patients. The morphology of binucleated lymphoid B-cells could suggest an association with viral infections, such as Epstein-Barr Virus. Biologic studies are not completely achieved to exclude and/or to confirm definitely the role of EBV in the pathogenesis of PPBL. The presence of characteristic binucleated lymphoid B-cells in asymptomatic family members and the description of familial PPBL cases suggest a genetic predisposition as a more likely possibility.
Epidemiology	PPBL was first reported in 1982. We have no epidemiological data on the incidence of PPBL.
Clinics	In a large series we reported on forty-three patients (9 males, 34 females: median age: 40 years, range 28-65), the clinical characteristics were splenomegaly in 16%, hepatomegaly in 0.5% and lymph nodes in 11.5% cases. An absolute lymphocytosis $> 4 \times 10^9/l$ is present in 80% of PPBL patients. A persistent, stable and polyclonal increase of IgM levels is usual and most PPBL patients express HLA-DR7. CYTOLOGY_IMAGE lymphocytosisFig1.jpg
Cytology	PPBL is identified in all cases by the presence of a variable (1.5 to 9%) number of binucleated peripheral lymphoid cells (Fig 1). The majority of lymphoid cells are large with abundant faintly and basophilic cytoplasm. Characteristic nuclei with a rounded or more commonly irregular form are observed. Immunologic markers: Both kappa and lambda light-chain are expressed, indicating a polyclonal expansion of the lymphocyte pool. The lymphocytosis is of the B-cell type: the lymphocytes react with CD19, CD20, CD22 and FMC7 antigens. Morphologic features showing typical binucleated cells
Prognosis	After a median follow-up of 5.5 years without treatment, 45 PPBL patients are alive.

### Cytogenetics

Cytogenetics +i(3q) (Fig 2) is the most common abnormality and is observed in 70% Morphological cases, occurring as a single aberration in only a few patients. PCC (Fig

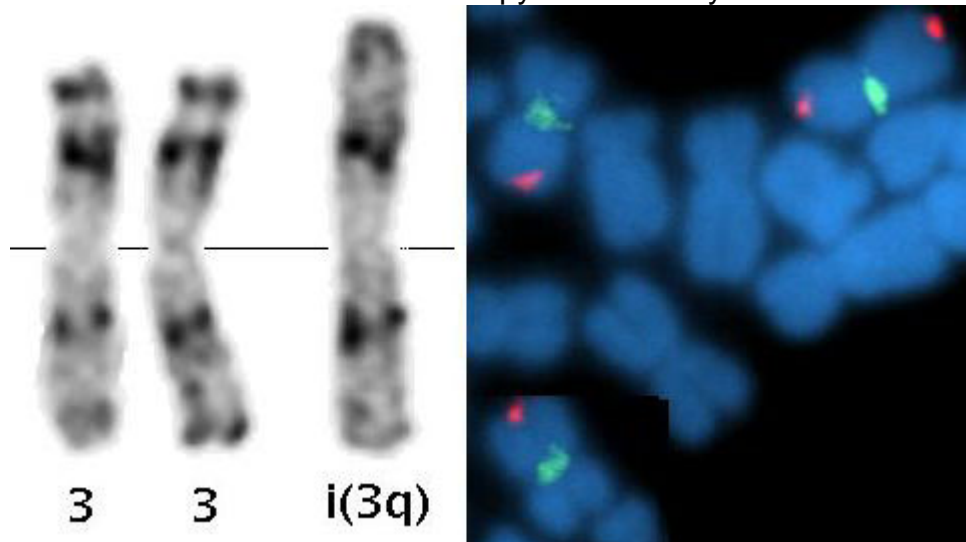
3) is observed in 40% cases and occur rarely as a sole abnormality. Both abnormalities associating +i(3q) and PCC are present in 37% cases.

Using alpha-satellite and telomere chromosome 3 specific probes, +i(3q) is more frequently detected by metaphase FISH studies. (Fig 2).

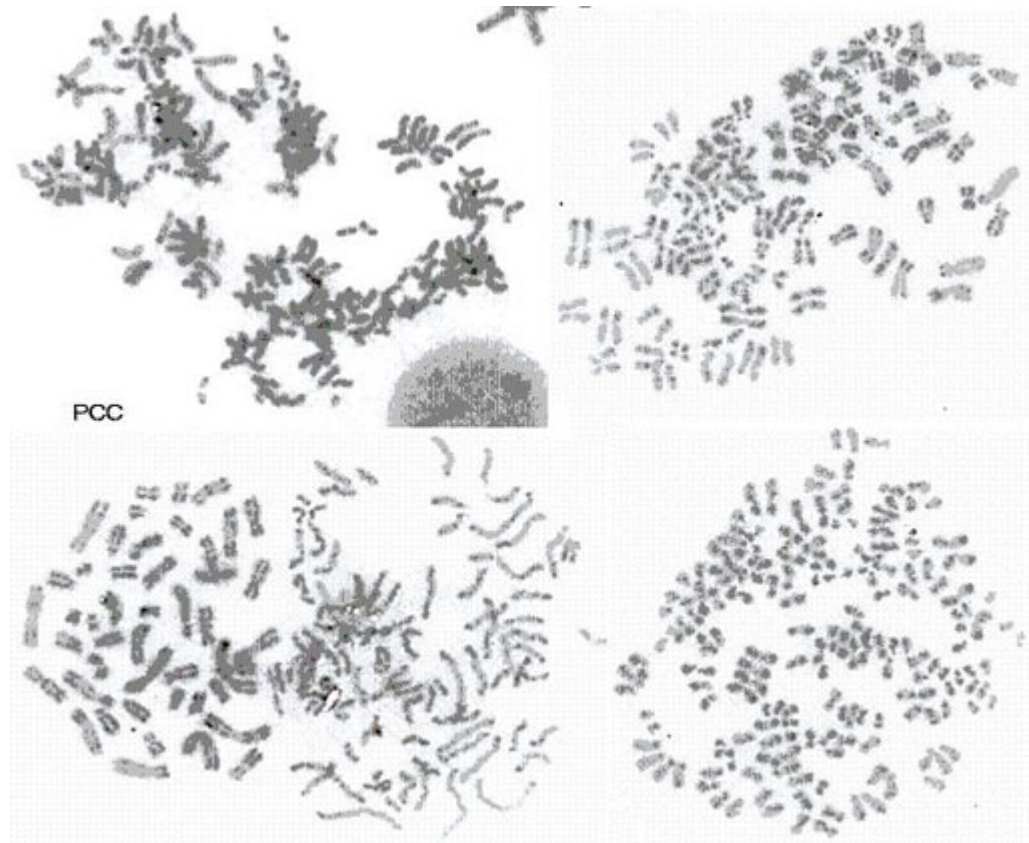
+i(3q) is rarely described as a recurrent cytogenetic abnormality in patients with hematologic malignancy. Trisomy 3 is reported to be associated with [marginal zone B-cell lymphoma](#). Gain of chromosome 3 or 3q was described in patients with typical clonal b-cell chronic lymphoproliferative disorders, chronic lymphocytic leukemia, prolymphocytic leukemia or Waldenström macroglobulinemia.

A chromosomal instability is present in 67.5% patients These patients present various clonal [ del(6q), +der(8) or +8 or polyploid karyotype] and non clonal chromosomal abnormalities with structural and numerical abnormalities.

This chromosomal instability is variable over time but persist in most cases. In spite of genomic instability, a long follow-up of PPBL patients remains essential and chemotherapy unnecessary.



Partial karyotype showing +i(3q) -R-banding (left); Detection of I(3q) with telomere chromosome 3q and alpha satellite specific DNA probes (right)



Premature Chromosome Condensation (PCC)

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**Written** 06-2004 Xavier Troussard, Hossein Mossafa

**Citation**

*This paper should be referenced as such :*

**Troussard X, Mossafa H .** Polyclonal B Lymphocytosis with Binucleated Lymphocytes (PPBL). Atlas Genet Cytogenet Oncol Haematol. June 2004 .

URL :

<http://www.infobiogen.fr/services/chromcancer/Anomalies/PolyclonalLympholD2040.html>

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