

## The Involvement of Infectious Diseases in Acute Lymphoblastic Leukemia

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### ABSTRACT

The infections are the first causes incriminated in the development of acute leukemia, such overlapping age patterns of childhood infection and peak incident ( Acute lymphoid leukemia) ALL suggest that one or more infectious agents might promote childhood ALL.

Subsequently this hypothesis was explained by Greaves et al 2006 by an inadequate immune response to early in life viral and bacterial infections.

Example:

1) TEL(ETV6)-AML1(RUNX1) *t(12;21)* translocation, is the most common chimeric fusion gene in childhood cancer selectively associated with B cell precursor acute lymphoblastic leukemia (ALL), The TEL-AML1 leukemia fusion gene dysregulates the TGFβ pathway in early B lineage progenitor cells .

2) Infection Exposure is a Causal Factor in B-cell Precursor Acute Lymphoblastic Leukemia as a Result of Pax5-Inherited Susceptibility.

- Another possible mechanism of development of leukemia that the viruses may integrate into the genome of precursor B cells :

Example:

1) Prenatal C adenovirus infections may generate the aberrant clones of lymphocytes that precede development of childhood acute lymphoblastic leukemia (ALL)

2) ATLL develops in < 5% of individuals infected with HTLV-1

3) EBV infection in of Hodgkin disease/Hodgkin lymphoma, Burkitt lymphoma .

- At this time, no study has been able to prove that a very specific microbial agent is the main cause for ALL.

However Other studies failed to detect the viruses in leukemia cell.

Example:

1) The human polyomaviruses in leukemia .

- The human herpes viruses or human parvovirus B19 with the diagnosis of ALL. Further studies are needed to prove biologically, the implication of infections in the development of acute leukemia, in order to find preventive measures to fight against these infections.

**Keywords:** Leukemia, Infection, B lymphocyte, Virus

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