Erythema infectiosum

- Parvovirus B19.
- Naked, icosahedral, SSDNA
- Three capsid proteins VP1-3
- cultured in BM cells, fetal liver cells.
- Globoside (P antigen) receptor found on erythroid progenitors, erythroblasts, megakaryocytes and endothelial cells.
- Primary site of replication is the nucleus of immature cell in the erythrocyte lineage.
- Clinical consequence is minimal unless pt compromised by chronic hemolytic process: sickle cell and thalassemia
- These pts might present with fever only. Then found to have anemia, and aplastic crises.
- Immunosuppressed pts (AIDS) with bone marrow failure, think of Parvovirus infection

Manifestations and diagnosis

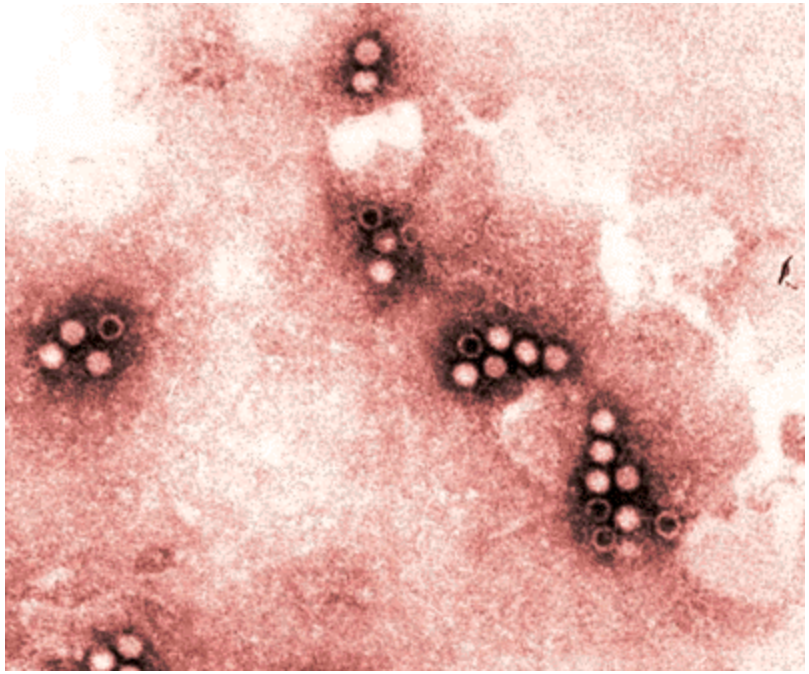
- IP 4-21 days
- Fever, malaise, headache and myalgia and itching
- Indurated rash on the face (slapped-cheek) which spreads in 1-2 days to arms and legs
- LNs, enlarged spleen and liver.
- Illness lasts 1-2 wks, but rash may recur for 2-4 wks upon: exposure to heat or sun light, on excersise or emotionl stress.
- Some times associated with arthritis and vasculitis.
- Rare complications: hepatitis, Thrombocytopenia, nephritis and encephalitis.

- Transmitted through respiratory route
- Spring months
- Viremia last 7-12 days

- Diagnosis: PCR, and serology:IgM-specific Ab

- Treatment: no definitive treatment, immunoglobulin

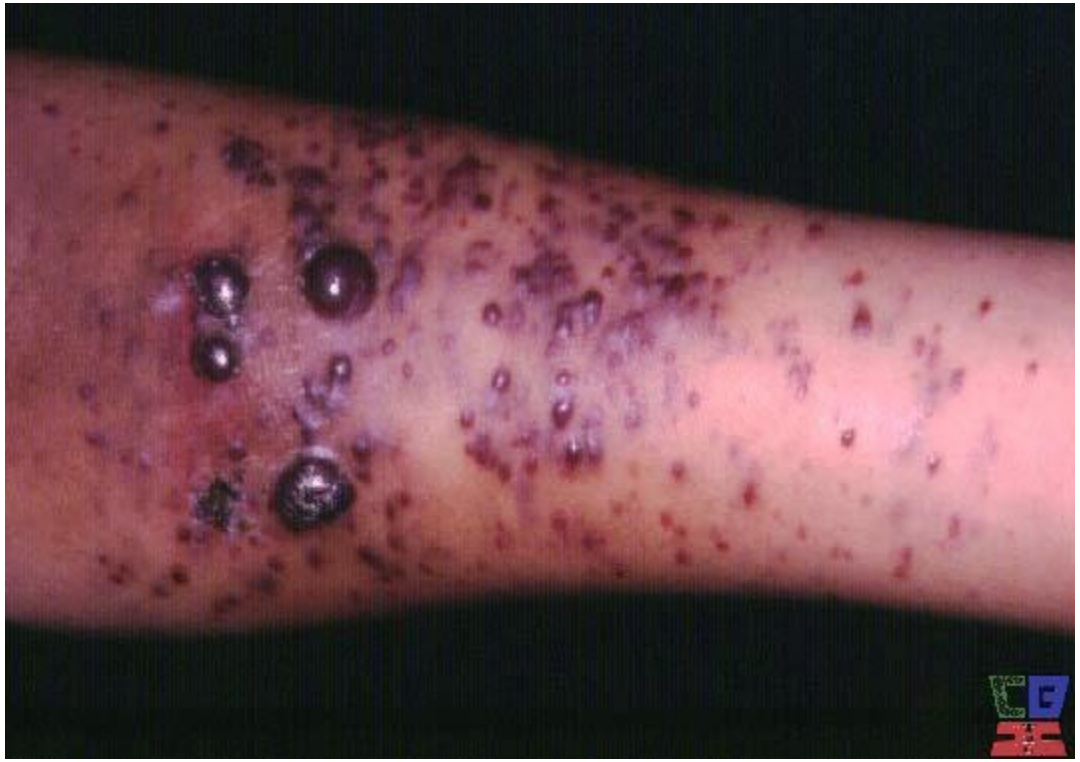
Parvovirus B19



Human Herpes Virus 8

- Belong to the gammaherpesviruses subfamily of herpesviruses
- Originally isolated from cells of Kaposi's sarcoma (KS)
- Now appears to be firmly associated with Kaposi's sarcoma as well as some lesser known malignancies such as Castleman's disease and primary effusion lymphomas
- HHV-8 DNA is found in almost 100% of cases of Kaposi's sarcoma
- Most patients with KS have antibodies against HHV-8
- The seroprevalence of HHV-8 is low among the general population but is high in groups of individuals susceptible to KS, such as homosexuals.
- The mechanisms by which the virus is contracted are not well understood:
  - Healthy individuals can be infected with the virus and show no signs or symptoms.
  - Infection is of particular concern to the immunosuppressed. Cancer patients receiving chemotherapy, AIDS patients and organ transplant patients are all at a high risk of showing signs of infection.
- Prevention: protected sex, saliva
- Treatment: Ganciclovir (not effective if tumor develops), HAART

Kaposi Sarcoma



HTLV

Human T cell Leukemia Virus type I (HTLV-I)

- **Associated with 2 fatal human diseases**
  - **Adult T cell leukemia (ATL)**
    - **clonal malignancy of infected mature CD4+ T cells**
  - **Tropical spastic paraparesis/HTLV-1 associated myelopathy**
    - **neurodegenerative disease**

Human T cell Leukemia Virus type I (HTLV-I)

- Endemic in parts of Japan, South America, Africa, Caribbean and the Iran.
  - With an estimated 10-20 million people infected worldwide
- Asymptomatic in majority of individuals with approximately 2-5% of HTLV-I carriers developing disease 20-40yrs post infection.
  - The long clinical latency and low percentage of individuals who develop leukemia suggest that T-cell transformation occurs after a series of cellular alterations and mutations.
- Infects primarily CD4+ T cells.

HTLV 1 Transmission

- **Extended close contact (cell-associated virus)**
- **Sexual (60% male to female *versus* 1% female to male transmission)**
- **Blood products (screening of blood supply since 1988)**
- **Mother to child (breast feeding: 20% children with seropositive mothers acquire virus)**

Epidemiology of HTLV-I

- **Appears to be transmitted sexually and through blood.**
- **Vertical transmission is thought to play an important role in the maintenance of virus in areas of high endemicity.**
- **Transmission through breast milk is implicated as a major route for the maintenance of infection in high prevalence areas.**
- **Is particularly common in :**
  IV drug abusers
- **An incubation period of 15 to 20 years have been suggested for the development of ATL.**

- In the United States as a whole, the incidence of ATLL is approximately 0.05 cases per 100,000 population
- ATLL is more common in Black Americans than White Americans and there is a slight male predominance overall
- The median age at diagnosis is in the sixth decade However, median age at diagnosis can vary with geographic location

PATHOGENESIS

- Adult T-cell lymphoma/leukemia (ATLL) is associated with HTLV-I infection of the tumor clone in 100 percent of cases
- In all malignant cells in an affected individual, the **HTLV-I pro-viral genome** is incorporated into an identical location of the genome
- The long-term risk of developing ATLL following infection with HTLV-I in endemic areas has been estimated to be 4 to 5 percent, usually after a latency period of several decades

- Exposure to the virus early in life increases the risk of eventual development of ATLL.

- A shorter latency period has been noted in infected patients receiving treatment with immunosuppressive agents for other reasons

- The exact mechanism by which HTLV-I contributes to tumor development is unknown. However, increasing evidence suggests that the viral regulatory gene tax (transactivating gene of the X region) encodes an oncoprotein, named tax protein

- The gene product induces **cellular proliferation, promotes cellular survival, and impairs DNA damage repair mechanisms**

PATHOLOGY

- **The organs involved varies but can include the peripheral blood and bone marrow, lymph nodes, and skin.**

- The **most characteristic morphologic change** seen in ATLL is in the peripheral blood of leukemic cases. In such cases, medium sized lymphocytes with condensed chromatin and bizarre hyperlobated nuclei ("clover leaf" or "flower cells") can be found
- Bone marrow involvement is seen in approximately 35 percent of cases. **Bone marrow infiltrates are usually patchy, ranging from sparse to moderate.**

HTLV-1 Diagnosis

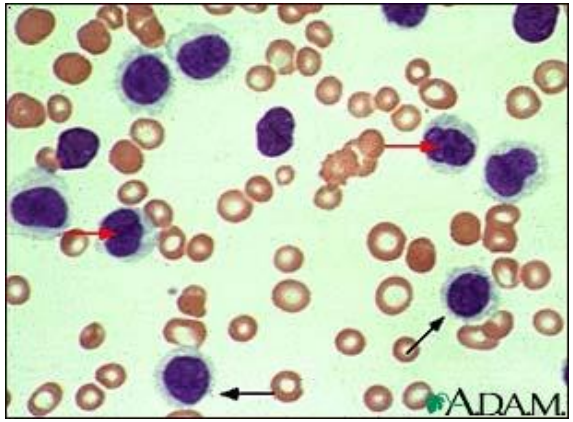
- Practically all patients with ATLL have serologic antibodies to HTLV-I. An enzyme-linked immunosorbent assay (ELISA) is the most frequently used screening test, using antigens prepared from whole virus lysate or by recombinant technology.
- Western blotting (WB) is normally used for confirmatory testing. WB also distinguishes between infection with HTLV-I and the less pathogenic HTLV-II.
- Polymerase chain reaction (PCR) based testing to detect proviral DNA in tumor cells should be performed in the rare instance where serology is negative but suspicion for ATLL is high. This test will also differentiate HTLV-I from HTLV-II infection.
- A definite diagnosis of ATL is made by documenting the presence of HTLV-I proviral DNA in the DNA of tumour cells.

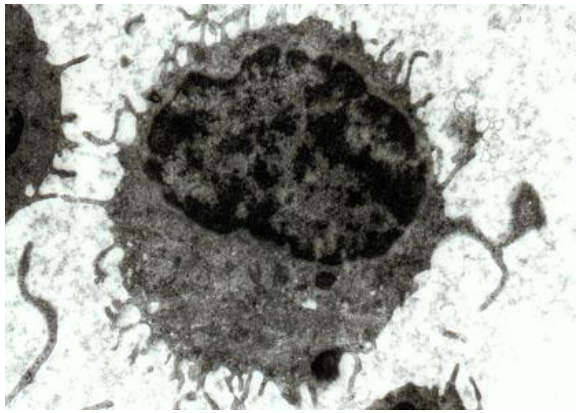
HTLV myelopathy/tropical spastic paraparesis

- HTLV-1 is also associated with a progressive demyelinating upper motor neuron disease known as HTLV-1 associated myelopathy/tropical spastic paraparesis (HAM/TSP), an characterized by sensory and motor deficits, particularly of the lower extremities, incontinence and impotence

HTLV-2

- Hairy cell leukemia
  - a rare lymphocytic leukemia, of B cell origin; caused by HTLV-2. it is characterized by malignant cells that look ciliated.





TREATMENT

- opportunistic infections: careful observation to aggressive chemotherapy and antiretroviral agents
- Adult T cell lymphoma: chemotherapy and interferon
- HTLV myelopathy: symptomatic treatment including corticosteroids and interferon.