Kala-Azar
Leishmaniasis

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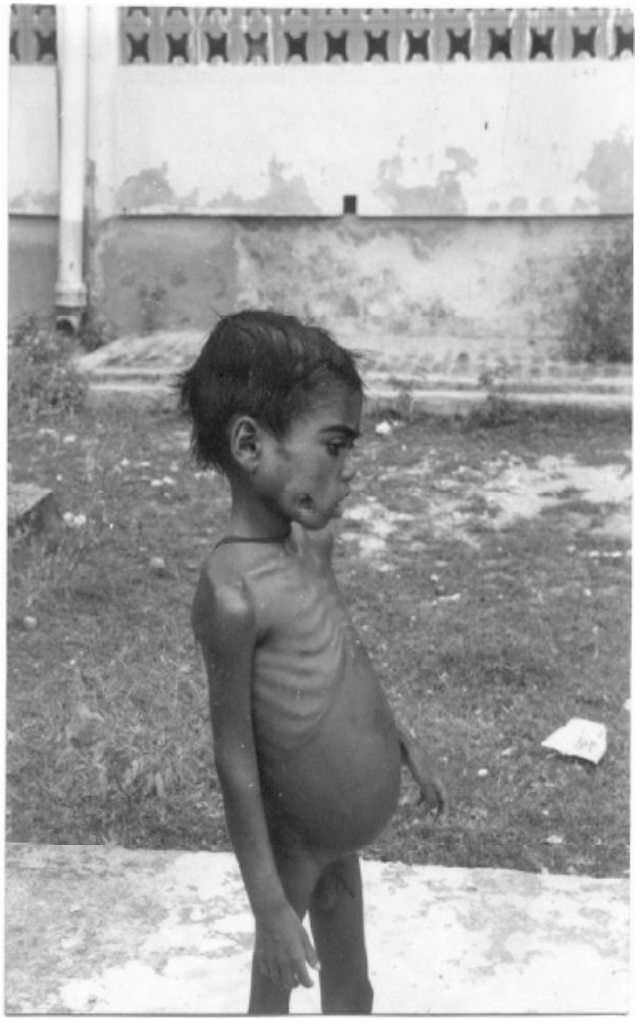
Outline of presentation

- Identification
- Infectious agent
- Occurrence
- Reservoir
- Mode of transmission
- Incubation period
- Susceptibility
- Methods of control

Identification



- The highly fatal dreaded Kala-azar (Leishmaniasis) mostly affects the children and young adul.ts

Clinical Types of Leishmaniasis

- **Visceral leishmaniasis :**
  - involvement of viscera/ reticuloendothelial system; associated with fatality if not treated timely
- **Cutaneous leishmaniasis:**
  - involvement of skin, ulcerating dry lesions; often heal spontaneously, leaves scars
- **Mucocutaneous leishmaniasis:**
  - involvement of mucosal multiple lesions often leading to disabling scars
- **Diffuse Cutaneous leishmaniasis:**

heals spontaneously

CLINICAL FEATURES:

- Fever (*intermittent*), long duration (weeks), may cycle irregularly
- Fatigue_, Weakness
- Abdominal discomfort, vague
- Epistaxis
- Vomiting (children) , Diarrhoea (children)
- Cough (children)
- Skin, scaly , gray, dark, ashen

Signs:

- Fever (Intermittent), may show double rise in

- Splenomegaly (one of the most striking features)
- Hepatomegaly
- Anaemia (due to Haemolysis, Short life span of RBC, Anti red cell antibodies) & Pancytopenia (prominent – leucopenia) & H*ypergammaglobulinemia*
- Weight Loss

t &

Atypical Features

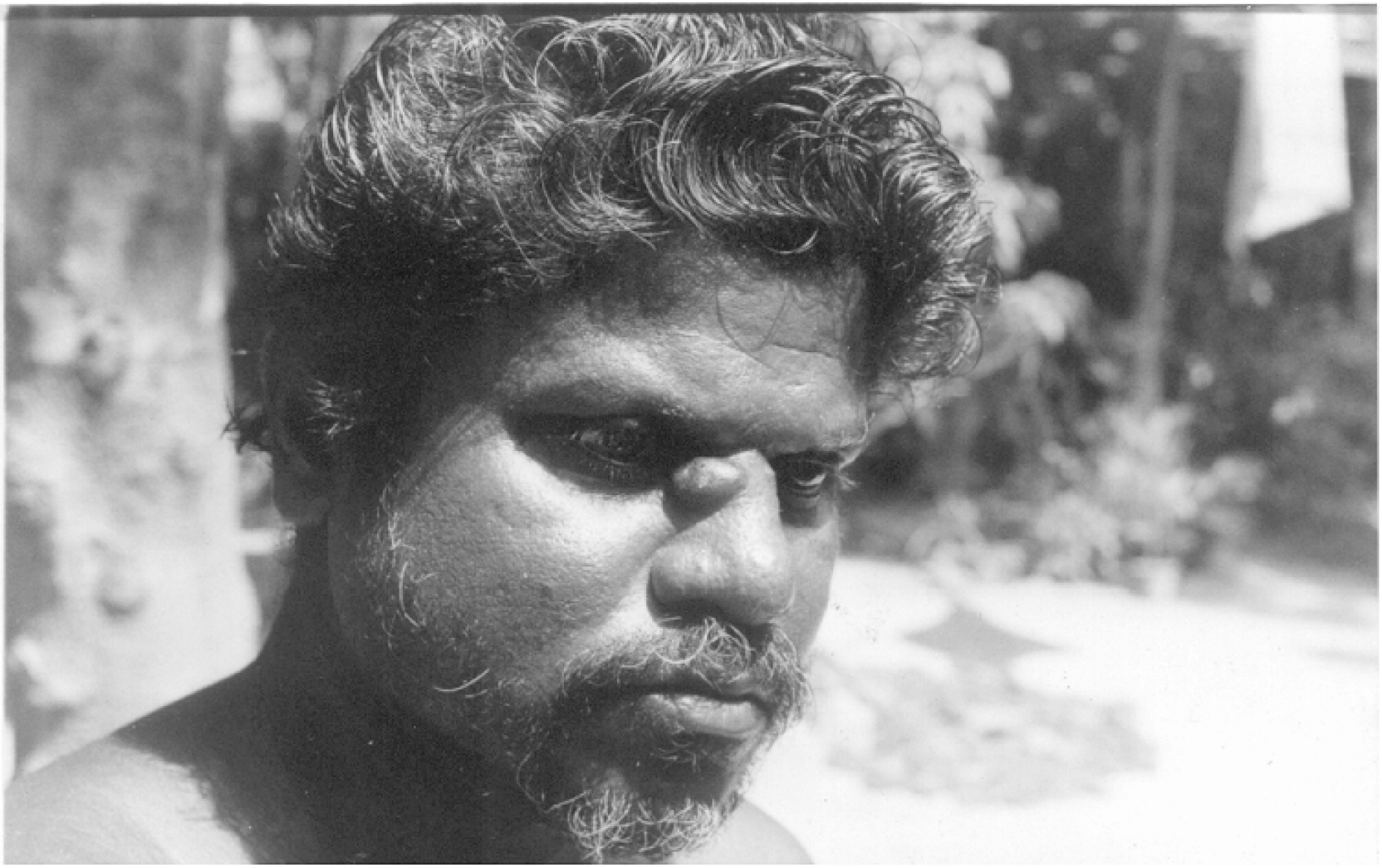
- Lymphadenopathy, Intercurrent Infections (due to profound immunosuppression) & even Bleeding
- PKDL :
  - Several years after apparent cure of K.A. (in about 10% cases)
  - multiple nodular infiltration of the skin usually without ulceration mainly on the exposed parts of the body.
  - Parasites are numerous in the lesions.

P K D L

- Depigmented Macules or Papules:
  - earliest lesions: on trunk & extremities.
- Erythematous patches:
  - early lesions on nose, cheeks & chin in a butterfly fashion ("Butterfly Erythema") & are photosensitive : prominent towards mid – day.
- Yellowish Pink Nodules :
  - replace earlier lesions or occasionally at the very beginning, mostly on face, may appear at any part of the body; Nodules – soft, painless granulomatous growth of varying sizes
- Absence of ulceration of nodules – Characteristic

PKDL

Unexplained epidemiological features : DL and not VL



PKDL-Hypopigmented type : note the flat type of lesions some are discrete while others are confluent

Clinical suspects

- Persons with fever for more than 3 weeks history, not responding to anti-malarial and antibiotics are to *be suspected for visceral leishmaniasis*.

- These suspected cases are to be referred to Medical Officer attached to the PHCs/ BPHCs.

Diagnosis of Kala Azar

- Demonstration of parasites in the stained smears of:
  - Bone marrow specimen
  - Splenic aspirates
  - L.N. – rarely
  - Culture of aspirates

- Serological tests
  - Aldehyde test
  - DAT
  - rk 39 strip test
  - CFT
  - PCR

Infectous Agents

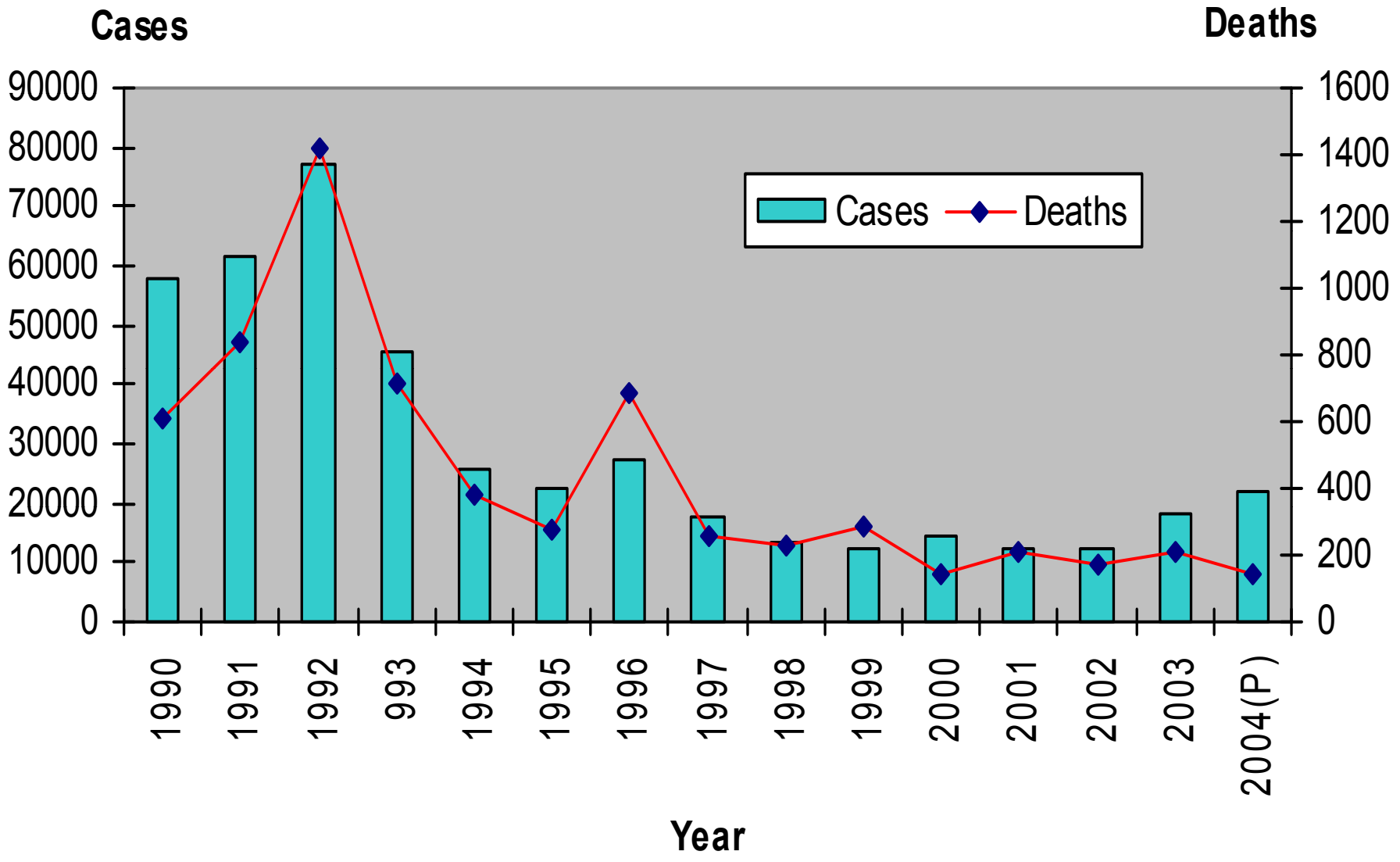
Leishmania donovani	Visceral Leishmaniasis/ Kala – Azar / Post Kala – azar Dermal Leishmaniasis (PKDL)
Leishmania infantum	Infantile Visceral Leishmaniasis
Leishmania tropica	Cutaneous *Leishmanisis*; urban/anthroponotic.
Leishmania major	Cutaneous *Leishmanisis*; rural/zoonotic
Leishmania aethiopica	Cutaneous *Leishmanisis*/ Diffuse Cutaneous *Leishmanisis*

Occurrence

KALA-AZAR : ENDEMIC AREAS

- 48 districts in 4 states
- Sporadic cases in some districts in UP

Kala-azar Trend in India



History of Kala-azar in India – Pre DDT era

- **West Bengal – known as 'Jwar-Vikar'**
  - 1824-25 -in Jessore (now in Bangladesh), 1832-33 (Nadia dist), 1857 (Hoogly dist), Kolkata (1943-46).

- **Assam – 'Sarkari bemari'**
  - 1869 (sporadic cases in Garo hills), epidemic 1875-83 (in Garo hills), Goalpara (1882- 87), Nowgaon (1892-98), Golaghat (1899).

- **Bihar – 'Kala-dukh'**
  - Purnea dist (1882) followed by epidemics in 1891,

Global occurrence

- Found in 5 continents (Africa, Asia, Europe, North America and South America)
- Endemic in the tropical and subtropical regions of 88 countries worldwide
- The geographical distribution of Leishmaniasis is limited by the distribution of Sand fly and it's :
  - Susceptibility to cold climates
  - Haemophilic nature with special predilection to humans only or also from animal reservoirs.

VISCERAL – LEISHMANIASIS (KALA – AZAR)

- Black Disease, Sikari Disease, Dum – Dum Fever, Burdwan Fever
- A group of diseases caused by intracellular protozoan parasites of the genus Leishmania.
- Twenty-one species of the genus infect humans
- All are spread by bites of infected sand flies of the subfamily Phlebotominae or Lutzomyia.

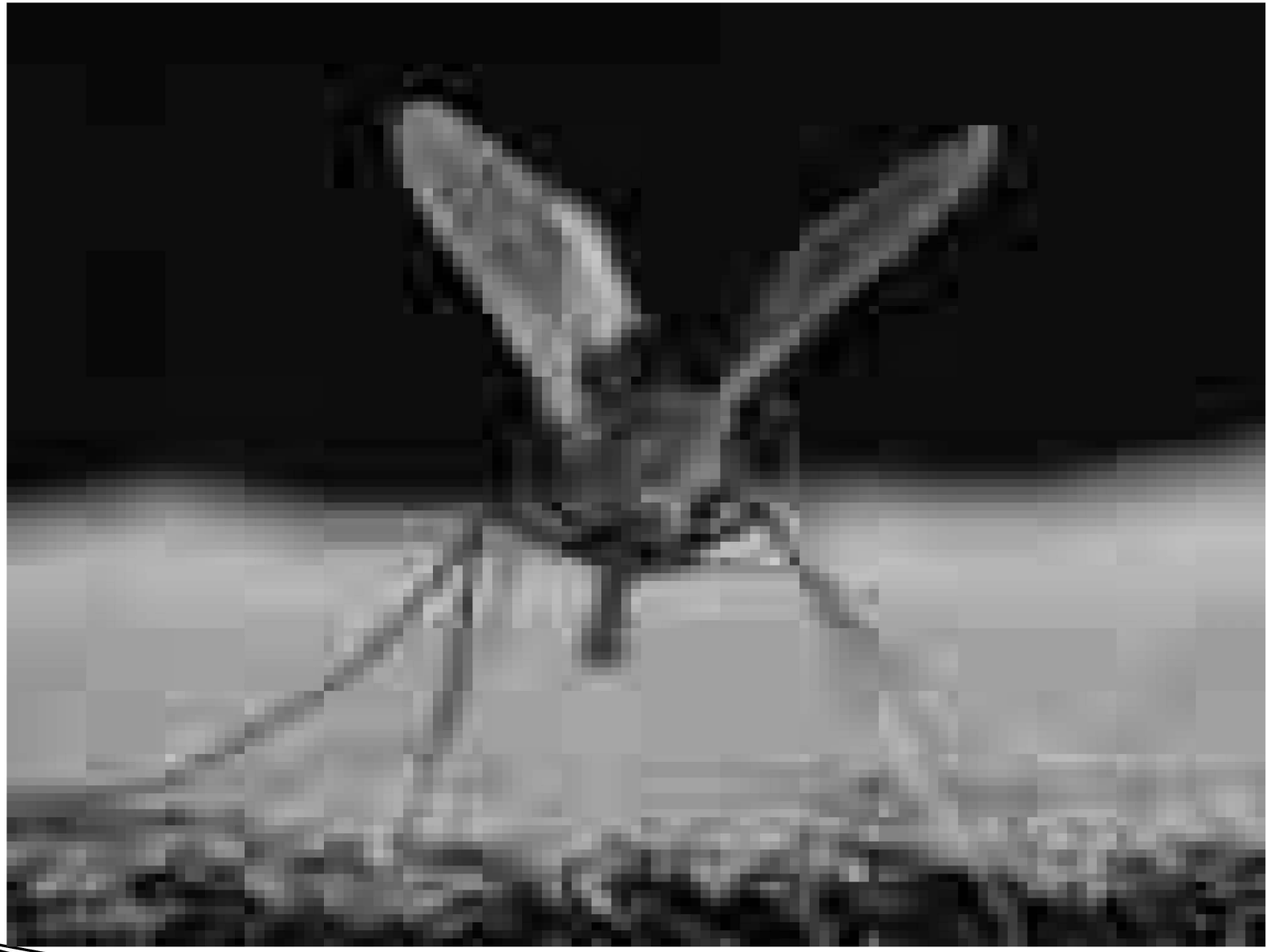
- Economic and demographic circumstances that contribute to increased prevalence include:
    - New agro-industrial projects
    - Large scale migration of populations to endemic areas
    - Unplanned urbanization and
    - Man made environmental changes:
        - Deforestations
        - Irrigations
        - Building of dams
    - More recently the HIV infection etc.

Reservoir

- **Man:**
  - No zoonotic reservoir detected so far in Indian Sub-continent
  - it's Anthroponotic in India.
- **Rodent:**
  - African kala-azar
- **Canine:**

- **Ecotype**:
  - Mainly prevalent in rural areas, wet and humid moderate climate, abundant vegetation

- **Seasonality**:
  - Transmission is seasonal coinciding high vector densities (generally prevalence is high during & after rains).

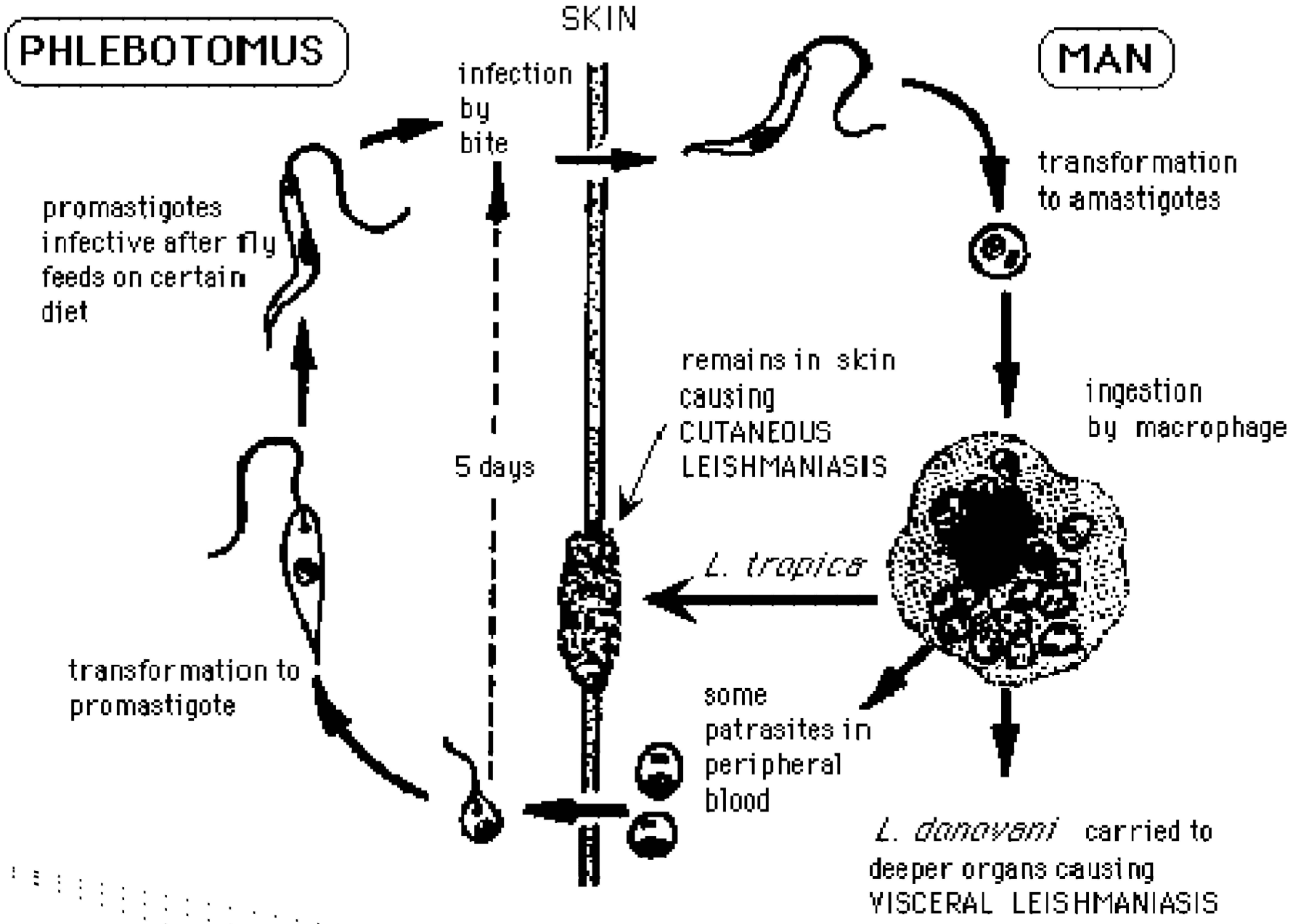


Methods Of Transmission

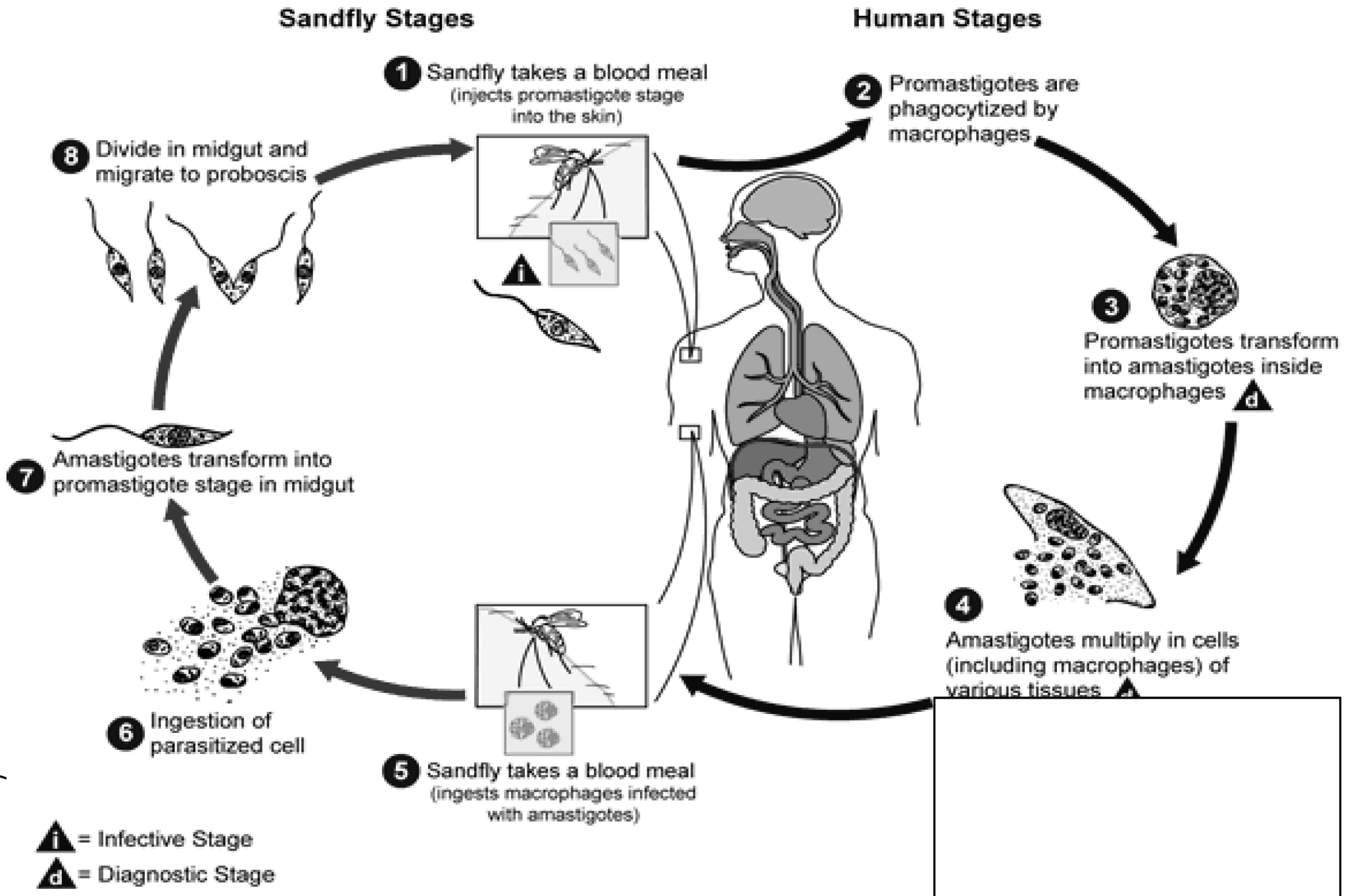
- Natural transmission by certain species of Sandfly (*Phlebotomus argentipes*)
- Other modes of transmission:
  - Congenital infection of a baby in utero
  - By blood transfusion
  - By inoculation of cultures of *L.donovani* &
  - Possibly during coitus (an S.T.D.)
  - Person to person through the sharing of

Life cycle of *Leishmania donovani* & *L. tropica*.

(After Smyth, 1994)



LIFE CYCLE


Sandfly Stages
Human Stages
1 Sandfly takes a blood meal (injects promastigote stage into the skin)
2 Promastigotes are phagocytized by macrophages
3 Promastigotes transform into amastigotes inside macrophages
4 Amastigotes multiply in cells (including macrophages) of various tissues
5 Sandfly takes a blood meal (ingests macrophages infected with amastigotes)
6 Ingestion of parasitized cell
7 Amastigotes transform into promastigote stage in midgut
8 Divide in midgut and migrate to proboscis
i = Infective Stage
d = Diagnostic Stage

Incubation Period

- Extrinsic:
  - 6 – 9 days (may be upto 25 days)
- Intrinsic:
  - Quite variable in man – generally 1 – 4 months (range is 10 days to 2 years)

Susceptibility

- *Kala azar*, is the most severe form of the disease, which, if untreated, has a mortality rate of almost 100%
- All age groups but more prevalent among children and young adults (majority of cases among 5 – 30 years age group)
- Slightly more prevalent among males than females

Methods of Control

- Vector control through IRS with DDT up to 6 feet height from the ground twice annually
- Early Diagnosis and Complete treatment
- Information Education Communication
- Capacity Building

Management of Kala Azar

- SSG : 20 mg/ kg B.Wt. / Day – Daily IM for 30 days
- Amphotericin – B : 0.5 – 1.0 mg/ kg B.Wt. Dissolved in 500 ml of 5% Dextrose – slow IV drip over a period of 6-8 Hrs alternate day for 20 days

Kala-azar Control Efforts in India

- An organized centrally sponsored Control Programme launched in endemic areas in 1990-91.

- Government of India provided kala-azar medicines, insecticides and technical support.
- The State governments implemented the programme through primary health care system and district/zonal and State malaria control organizations and provided other costs involved in strategy implementation.

Kala-azar Elimination Initiative

- National Health Policy Goal: Kala-azar Elimination by the year 2010
- Elimination Programme is 100 per cent Centrally Supported (except regular staff of State governments & infrastructure)
- In addition to kala-azar medicines and insecticides, cash assistance is being provided to endemic state since December 2003 to facilitate effective strategy implementation by states

Thank You