AFRICAN TRYPANOSOMIASIS (Sleeping Sickness)

ETIOLOGY: hemoflagellates

Trypanosoma brucei gambiense (TG)
Trypanosoma brucei rhodesiense (TR)

DISTRIBUTION: Africa: West-Central (T.b.g.), Central-East (T.b.r.)

VECTOR/TRANSMISSION: bite of Tsetse fly (Glossina)

LIFECYCLE:
- Fly: trypomastigotes → EPIMASTIGOTES → metacyclic trypomastigotes (infective form)
- Human: extracellular - DIVIDING TRYPOMASTIGOTES
  (antigen switching = immune escape mechanism)

PREFERRED HOST: T.b.g = humans vs. T.b.r. = zoonosis = antelope (human accidental host)

PATHOLOGY:
1. CENTRAL NERVOUS SYSTEM (encephalitis)
2. heart

DIAGNOSIS:
1. Thin and thick blood smears T.b.r. ++ vs. T.b.g = +/-
2. Buffy coat (centrifuge blood sample → whitish surface layer enriches for tryps).
3. CNS: Laboratory evaluation of spinal fluid is mandatory

PREVENTION/CONTROL:
1. insect repellent – wrist/ankle.
2. thick protective, lengthy clothing, bed netting.
3. destruction of Tsetse habitat (riverine –TG)

RESERVOIRS: T.b.g. = Humans vs. T.b.r = Bushbuck, hartebeest, cattle

AMERICAN TRYPANOSOMIASIS (Chagas Disease)

ETIOLOGY: zoonotic hemoflagellate, Trypanosoma cruzi

DISTRIBUTION: Central and South America - [Texas !!!!!!!]

VECTOR/TRANSMISSION:
1. Inoculation of Reduviid bug ("kissing bug") feces
2. Oral transmission: outbreak of Chagas Disease in Brazil by ingestion of sugar cane and acai juice.
3. blood transfusion
4. organ transplant
5. congenital
LIFE CYCLE:
In insect: trypomastigote → EPIMASTIGOTE → metacyclic trypomastigote (infective)
In human: metacyclic trypomastigote → AMASTIGOTE → trypomastigote

PATHOLOGY:
1. acute: severe myocarditis
2. chronic: chronic myocarditis, megasymphdromes (esophagus, large intestine = severe dilatation and loss of peristalsis)

DIAGNOSIS:
1. Acute phase: thin and thick blood smear
2. Chronic phase: serology, xenodiagnosis (50%+)
3. FDA-approved serological screening test in blood banking with a sensitivity of almost 100%. (since Dec.2006)

CONTROL: Vector control – National Control Program of Brazil.
1. Serology – house infestation?
2. Attack phase (spraying)
3. Vigilance phase (health education)
4. Improved housing
5. Behavioral change (no animals in the house)

The Pan American Health Organization certified Brazil free of domestically transmitted Chagas disease (2006)

RESERVOIR: 100 different species of mammals, sylvatic (forest) and domestic (dogs, cats)
ERADICATION OF DISEASE RESERVOIR IMPOSSIBLE

SPECIAL CONSIDERATIONS:
1. T. rangeli is in same geographic area as T. cruzi in S. America. Morphology similar to African T. but with SUBTERMINAL kinetoplast. Transmitted by Reduviid bugs. Share common antigens with T. cruzi, so past population studies by serology for T. cruzi might be erroneous where both infections strongly overlap. Special serological assays available to differentiate from T. cruzi. NO CLINICAL SYMPTOMS.

2. Chagas cases have been described in stray dogs and pet dogs (Texas). Several cases of human Chagas described in California and Texas. One human case recently in Louisiana. Chagas = potential health risk in Southern USA.

3. REASONS FOR NOT HAVING MAJOR OUTBREAK IN THE US:
a. Triatomines in USA are more zoophilic (Triatoma is the genus name of most of the vectors in the family, Reduviidae)
b. Delayed defecation of the bug. (Triatoma gerstaeckeri)
c. Housing not conducive for nesting of triatomines