Microscopical Diagnosis of Tropical Diseases for Haematologists

Tropics, tropical climate and tropical diseases

Konstantinos Liapis

Consultant Haematologist, Georgios Gennimatas Hospital

A short introduction to the tropical environment is necessary to understand the geographical distribution and epidemiology of tropical diseases. That is because the tropical environment has profound influence upon endemicity and epidemiology, especially in infectious diseases and those dependent on vector transmission.

The **tropical belt** extends between the Tropic of Cancer (23.5° N of the Equator) and the Tropic of Capricorn (23.5° S of the Equator). The geographical area between tropical and temperate zones, i.e. between 23.5-35° N and S of the Equator, is called **subtropical** (the 35th parallel north crosses Crete and Cyprus). Several tropical diseases also occur in subtropical areas.

The epidemiology of a disease is linked to the patient's geographical area of origin. A detailed travel history (recent and old journeys) is essential, and an atlas should be part of every medical library.

The physician needs to know the duration of travel and the incubation periods of potential infections.[1,2]

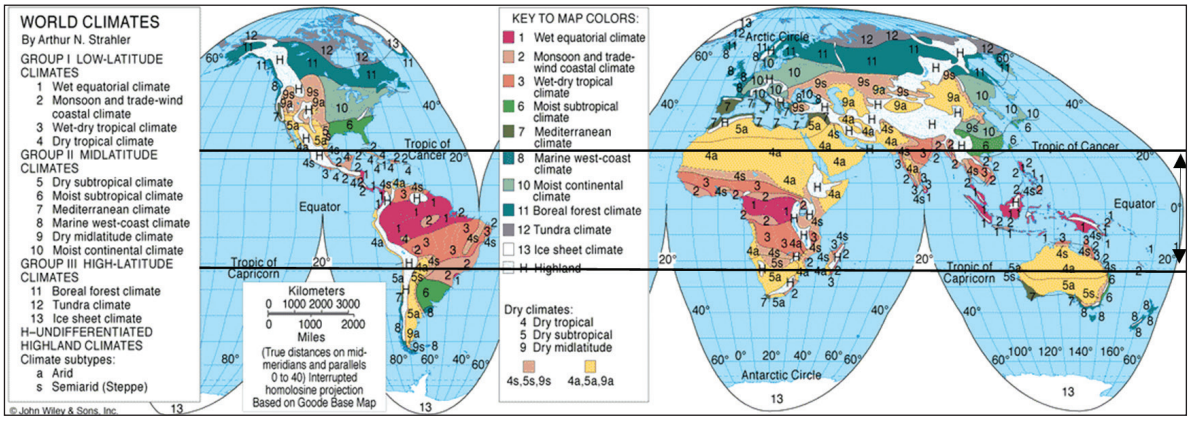
When taking a medical history, questions about travel and migration are of paramount importance.

TROPICAL CLIMATE[3]

The tropical climate is usually wet and warm (20-30°C throughout the year). However, there are several climate types in the tropical zone, as seen in the climatic map (Figure 1).

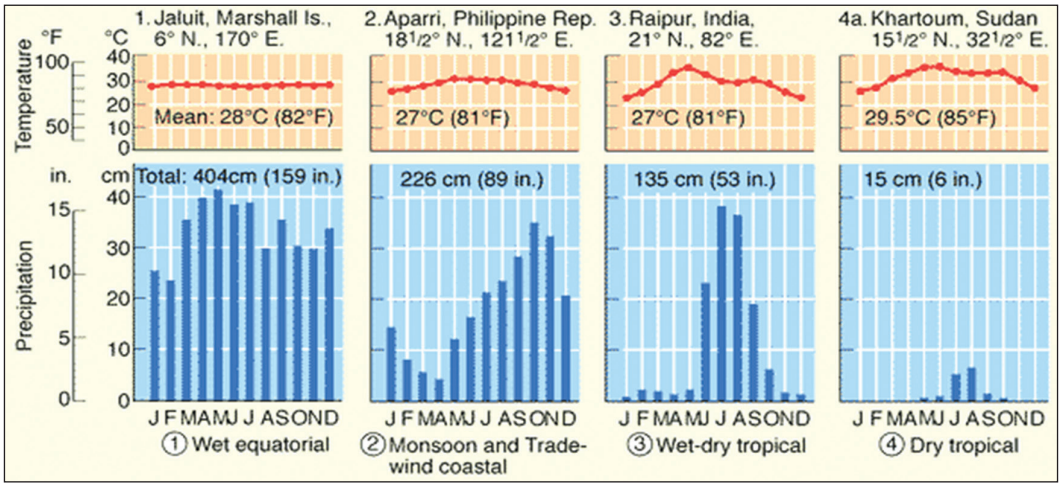
Tropical climates include extremely wet climates (**Wet Tropical** or Wet Equatorial/Tropical Rainforest) with regular rainfall throughout the year, extremely dry climates (**Dry Tropical**/Tropical Steppe), climates with wet and dry periods (**Wet-Dry Tropical**/Tropical Savanna), and climates characterised by periodic heavy rainfall (**Tropical Monsoon** or Trade-Wind Coastal). Tropical Monsoon climates are mostly found in southern Asia and West Africa (a monsoon is a wind system that reverses its direction every six months, flowing from sea to land in the summer, and from land to sea in the winter).

The temperature also varies in the different types of tropical climates. In the Wet Tropical/Rainforest climate, temperatures remain fairly constant throughout the year, whereas in the Dry Tropical climate there is seasonal change (Figure 2).



Modified from: Strahler AN. Physical Geography, 3rd Edition, Wiley, 1969.

FIGURE 1. Climatic map.



From: Strahler AN. Physical geography, 3rd Edition, Wiley, 1969.

FIGURE 2. The climograph depicts the highs and lows of temperature and precipitation over a year for the four types of climate in the tropical regions.

The geographical distribution of malaria, dengue, and filariasis favours areas with warm temperatures and high humidity, having minimal variation of both.[4-6]

Note: the warm tropical climate throughout the year is associated with high levels of malaria transmission.

In tropical communities, malnutrition, helminthic infections and malaria are less common in an urban adult population but may have to be considered in other patients in particular children, pregnant women, or in the rural poor.

REFERENCES

1. Spira AM. Assessment of travellers who return home ill. Lancet. 2003 Apr;361(9367):1459-69.
2. Spira AM. Preparing the traveller. Lancet. 2003 Apr;361 (9366):1368-81.
3. Strahler AN. Physical geography. 3rd ed. New York: J. Wiley and Sons; c1969.
4. Cook GC, Zumla AI. Manson's tropical diseases. 22nd ed. London: Elsevier Saunders; c2008.
5. Binford CH, Connor DH. Pathology of tropical and extraordinary diseases. Washington: Armed Forces Institute of Pathology; c1976.
6. Peters W, Pasvol G. A colour atlas of tropical medicine and parasitology. 6th ed. London: Mosby Elsevier; c2007.