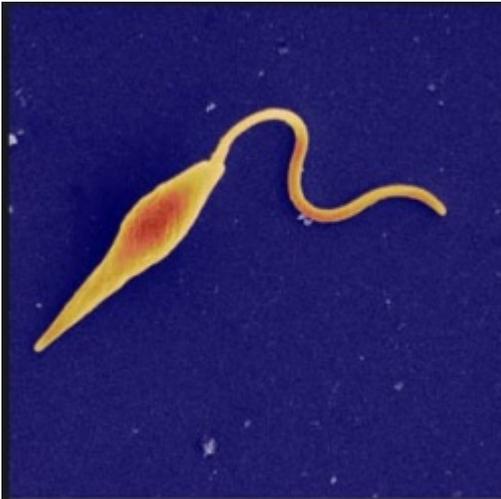


The Next Plague: Leishmaniasis - The World's Second Greatest Parasitic Killer, After Malaria



By Steve Schow — April 27, 2017



Leishmaniasis Photo: eMedMD.com

Parasitic infections remain among the great neglected scourges in the world. These diseases include malaria, Leishmaniasis, African sleeping sickness, Chagas disease, giardia, pneumocystis carinii, toxoplasmosis, cryptosporidium and Entamoeba histolytica. Malaria is a massive global health problem. Each year 450 million people are infected with the parasite *P. falciparum* and another 390 million people are infected with *P. vivax* leading to one million malaria-caused deaths per year. Humans are the main host reservoir for malaria, which is transmitted by the female *Anopheles* mosquito vector.

Leishmaniasis, which is transmitted by a sandfly bite, causes 500,000 cases of visceral disease and 1.5 million cases of cutaneous disease annually with 50,000 annual deaths. Annually, *Entamoeba histolytica* is estimated to cause 50 million cases of amoebic dysentery and 100,000 deaths, many of whom are children and infants. *Pneumocystis carinii* and toxoplasmosis can be a death sentence for immunocompromised patients, while giardia and cryptosporidium can contaminate drinking water and swimming holes. Toxoplasmosis, acquired while handling that beautiful little kitten during pregnancy, can lead to catastrophic consequences for the baby, including psychomotor and mental retardation.

The drugs required to treat many of these bugs were developed during the first half of the 20th Century to prevent these exotic illnesses in troops engaged in expeditionary military misadventures in the parasite hot zones. By the 80s, most pharmaceutical companies had shuttered their anti-parasitic drug research. Consequently, many of the drugs used today were discovered over a half century ago and display awful side effect profiles, very unattractive dosing regimens and are now having issues with drug resistance. Even the newer agents suffer from

these deficiencies.

Most of the work targeting parasites focuses on malaria because of the magnitude of the problem. The work is slow because of the lack of resources and the higher demands placed on the safety and drug administration features desired by regulatory authorities and patients today. Obnoxious but effective drugs are no longer acceptable even for these diseases. Pharmaceutical companies show little interest in inventing drugs for these diseases, because there is no money in any of them. They could never recoup their investment, plus there are many more lucrative diseases towards which to direct their limited pools of R&D funds.

So, this begs the question: Need we worry about these global problem bugs becoming pandemics knocking at our door? Well, as noted above, malaria was the 4th leading cause of death in the US in 1850, and it is certainly possible that this problem could return. In the 1980s, suddenly and without warning, several of these parasites became very significant, life-threatening, opportunistic infections in immunosuppressed AIDS populations.

The pneumonia causing parasite, *Pneumocystis carinii*, was perhaps the most notorious and visible of the devastating and deadly of opportunistic infections killing AIDS patients prior to the arrival of the anti-HIV drugs. It took a couple of decades of HIV drug R&D by the pharmaceutical industry for those anti-HIV drugs to materialize and halt this deadly problem. Most unfortunately, a lot of HIV patients died while waiting for those lifesaving drugs. For now, we are frozen in time with respect to anti-parasitic treatment advances.

All the while we are brewing up drug and even multi-drug resistant strains of parasites, which are especially prevalent in malaria today. Now and in the foreseeable future, only immunosuppressed patients, global travelers and refugees from the great parasite hot zones in the tropics are in jeopardy here. These parasites already sustain vast plagues in the tropics with deadly consequences for millions. Adding a few of us to the mix will not make matters any worse. However, if you are unlucky enough to contract one of these bugs, you will not be a happy camper. If the parasite doesn't kill you, the treatment may make you wish it had.

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