Cardiologist in the shadow of Angkor Wat: a medical mission to Cambodia

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In a medical mission to Cambodia, our team of doctors, dentists, and nurses saw over 1000 patients during 4 days of clinics. The most common cardiovascular problems were hypertension (11%) and heart murmurs (3%). Obesity and a history of diabetes were very rare. Unlike the cardiac patients I typically see in my Atlanta office, the Cambodians were trim and muscular from their predominantly farming and, less often, construction jobs. They are a gentle, seemingly happy people, appreciative of whatever limited medical help we could offer. Tuberculosis was the most prevalent serious illness noted.

My knowledge of Cambodia was mainly limited to the 1970s atrocities I had read about: Pol Pot, the Khmer Rouge, “Killing Fields,” and land mines causing legless children. I had heard of Angkor Wat, felt by some to be the eighth wonder of the old world. When I heard about the Flying Doctors of America’s medical mission to Cambodia, my wife and I signed on, I as a cardiologist and Marilyn as an aide in the distribution of medications. The team was headed by Allen Hord, MD, an anesthesiologist and pain specialist, assisted by Dave Rayburn, EMT. The team included two other physicians, nurses, dentists, and a chiropractor.

CAMBODIA

I tried to learn as much as I could about the country before we arrived. Twenty hours of flying time (Atlanta to Seoul to Siem Reap) provided ample opportunity for reading.

About 1000 years ago, the Khmer Empire ruled most of Southeast Asia between the 9th and 15th centuries. The capital, Angkor, sprawls over 138 square miles and features innumerable temples distributed over 77 square miles, the most famous of which (besides Angkor Wat) include Angkor Thom, Ta Prohm (*Figure 1*), and Banteay Srei. Angkor Thom alone is spread over 10 square miles and was built by Jayavarman VII, the greatest Khmer king in the 13th century who converted from Hinduism to Buddhism, a faith followed today by 90% of the people. When a Chinese diplomat visited in 1296 AD, there were at least 700,000 inhabitants of Angkor Thom (when the populations of Paris and London were <100,000). Today, the temple, Ta Prohm, brings to mind scenes from the movie *Tomb Raiders*, starring Angelina Jolie (who has a special

Figure 1. Ta Prohm Temple, used in the *Tomb Raiders* movie.

interest in landmine removal and even adopted a Cambodian child).

Cambodia today is a multiparty democracy under a constitutional monarch, King Norodom Sihamoni. The prime minister (for the past 28 years) is Hun Sen, a former member of the notorious Khmer Rouge.

Cambodia is about the size of Oklahoma, with a population of 15 million, 75% of whom are farmers. It is a poor country, with a per capita income of only \$2470 (1). Over a third live in poverty. An estimated 1 of 275 people have been maimed by landmines. Under the 4-year rule (1975–1979) of Khmer Rouge and notorious leader Pol Pot, up to 2 million Cambodians died of starvation, overwork, and execution.

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Figure 2. Patients awaiting our arrival at an area clinic.

The fall of the Khmer Empire in the early 1400s was due likely to invasions, floods, droughts, and a lack of access to emerging shipping trades (2). Cambodia was remote to the outside world until the arrival of explorers, including French naturalist Henri Mouhot, who discovered Angkor and published accounts of his findings in 1868 (3).

POLITICAL CONCERNS TODAY

To compete with factories in China, foreign companies have been heading to Cambodia. Between 2011 and 2012, foreign direct investments increased by 70%. National elections on July 28, 2013, produced claims of widespread cheating and threats of mass protests, owing to thousands of temporary “identification cards” that voters required. Forests are being chopped down and burned to make charcoal. Large sugar plantations are confiscating individual homes at subpar prices and selling their products largely to Europeans, who enjoy duty-free access. Cambodian and Thai troops have clashed in recent years over ownership of land and temples along the border, an area near where one of our clinics was held.

Figure 3. (a) My medical office and (b) my wife, Marilyn, who helped in medication packaging and distribution.

Figure 4. Scars from the application of heated cups, to self-treat pain in the head, chest, and abdomen.

MEDICAL PREPARATION

Each of us was given a large shopping bag full of medications and supplies we took with us and assembled at the hotel in Siem Reap. We were advised to get typhoid shots, to take atovaquone-proguanil (Malarone) for malaria protection, to spray our clothing with Permethrin, and to apply DEET to exposed skin areas to help protect against dengue fever. It was not very reassuring that a current guidebook advised us to “get a blood test if you suspect you have dengue fever, as there is a fatal variety that does not need to be treated” (1). We also took ciprofloxacin and metronidazole in case we got traveler’s diarrhea and used standard precautions since HIV/AIDS and tuberculosis were common. Upon our return, we added mebendazole to protect against worm infestations.

THE MEDICAL MISSION

Our medical team was busy, seeing a total of over 1000 patients in 4 days of clinics, with about 20% of the cases being dental. We visited four different sites (Sre Nouye, Chanleasdei, Svay Chek, and Srogné). Patients were waiting for us upon our arrival (*Figure 2*). Our facilities were adequate (*Figure 3*), except for the lack of sinks and running water.

Medical histories were hard to obtain, even with fairly good translators. Important aspects of chest pain, such as precipitating cause, duration, etc., were vague at best. Only 1% of patients I saw had histories consistent with angina pectoris. Eleven percent were hypertensive. Heart murmurs were heard in 3%. One of the latter, a diffuse grade 3/6 murmur, was likely due to mitral regurgitation, as the carotid upstroke was normal and the murmur did not change on the beat after an ectopic beat. Another was most likely a bicuspid aortic valve with aortic stenosis and aortic regurgitation. A 14-year-old girl had clubbing of the fingers and toes and a diffuse grade 3 systolic ejection murmur spilling over in diastole; she likely had a bidirectional shunt with Eisenmenger physiology and possibly

Figure 5. Dr. Uy Chanthol, the only “adult heart doctor” in Siem Reap, Cambodia, with his echocardiogram machine.

Figure 6. Defused mines at the Landmine Museum.

tetralogy of Fallot. A handheld echocardiogram would have been useful.

The internist asked my opinion about a 53-year-old lady with a cough and bibasilar rales. Her neck veins were a little distended and her apical impulse was displaced and diffuse. I felt she did have mild heart failure, most likely due to a cardiomyopathy, as she lacked a murmur. Obesity was seen in <1%, as most patients were hardworking farmers and a few were construction workers, subsisting on a largely rice-based diet. Application of heated cups (*Figure 4*) was fairly common to treat various pains in the head, chest, or abdomen. Goiters were rare, as was a history of diabetes.

Back in Siem Reap, I met with Uy Chanthol, MD (*Figure 5*), the only “heart doctor” for a metropolitan area well over 125,000. Dr. Chanthol is 41, trained primarily as a psychiatrist. Because many of his psychiatric patients had symptoms seemingly cardiac in origin, he recently took a 6-month intensive cardiology training course in Seoul, learning electrocardiography and echocardiography. He spends mornings overseeing the intensive care unit at the Siem Reap Provincial Hospital, with 5 to 7 patients at present, and afternoons in his small office, seeing up to 10 patients. He states that he has a defibrillator in the intensive care unit and is “learning to use it.”

I tried to ask older patients what their lives were like under the Khmer Rouge period. Many had had parents, siblings, and spouses killed for no good reason.

The last day I visited the Royal Angkor International Hospital, part of the Bangkok Hospital network. The hospital opened

6 years ago and has 5 full-time medical doctors and 7 part-time ones to care for up to 30 patients. I met with Dr. Kamol Prinyanusom, a general medical doctor and head of marketing. He indicated that they average about one myocardial infarction per month. They lack an on-site cardiologist but consult via the Internet with cardiologists in Bangkok and administer streptokinase when appropriate. Critically ill cardiac patients are transported 40 minutes by plane or helicopter to Bangkok, and they recalled three such transports in the past year. They have an automatic external defibrillator, but lack electrocardiography, treadmill, and bicycle testing and do not provide cardiac rehabilitation.

The hospital was immaculate and seemingly catered to the more affluent Cambodians and tourists. It was about to open an “anti-aging” facility in conjunction with a center based in San Diego, California, which will utilize chelation, cleansing enemas, and other alternative health measures.

THE LANDMINE MUSEUM AND DEPARTURE

We did visit the Landmine Museum early in our extra time and saw the thousands of defused mines that had been detected (*Figure 6*). A school accompanies the museum and initially focused on children who were missing appendages because of landmines, but it now has mainly polio victims and other disadvantaged individuals. An estimated 820,000 antipersonnel mines, 20,000 antitank mines, and 1.7 million unexploded ordinances were removed between 1992 and 2008. A local hero, Aki Ra, initially removed thousands of mines, using just a stick and a pair of pliers.

We celebrated the end of our enjoyable medical and dental mission in the Elephant Bar of the famous Raffles Grand Hotel, anxious to fly home before the arrival of typhoon Haiyan. On the plane, we met several members of the Johns Hopkins Cardiac Surgical Mission to the Jayavarman VII Children’s Hospital in Siem Reap. Their team included pediatric cardiologist Bill Rauckes, MD, and surgeon Luca Vricella, MD, who had repaired 13 congenital cardiac maladies in the prior week.

1. Vater T. *Angkor Wat*. Berkeley, CA: Moon Handbooks, 2013.
2. Stone R. Divining Angkor. *National Geographic* 2009;220:27–55.
3. Ray N, Bloom G. *Cambodia*. Oakland, CA: Lonely Planet, 2012.