

Editorial

Snakebite, an underreported cause of disabilities and deaths

South and Southeast Asian snakebites are mostly a rural problem and underreported. Treatment in much of this region is often not evidence-based and by traditional healers rather than at medical centers. Thailand is fortunate to have a good infrastructure of community medical centers and district hospitals throughout most of the country. It reports approximately 7,000 snakebites with 30 annual known deaths. India, on the other hand, has at least 200,000 venomous snake bites with 35,000 deaths per year. Vietnam reports 300,000 snake bites with 66,000 case fatalities. Nepal had only 200 reported deaths among 20,000 snakebites. Pakistan has staggering 20,000 snakebite deaths reported annually. Malaysia reports 1,000 deaths among 14,000 snakebites. Myanmar is known as the capital of snakebite deaths; mostly from Russell's viper bites. The "Big Four" snakes that cause deaths are cobras, Russell's vipers, and Kraits as well as the Saw scaled viper (in India). They cause the majority of deaths in most of this region. All of these numbers must be considered only as educated estimates. Competent and evidence-based medical care should be able to save almost all envenomed victims that receive evidence-based care in a timely fashion. Deaths are mostly due to lack of respiratory support, bleeding, hemolysis or sepsis from severe necrotizing reactions without early competent surgical care. Overtreatment and under treatment are still common as shown by these examples from Thailand, occurring in a region where the literacy rate is in the high 90 percents and adequately staffed and equipped hospitals should be accessible [1-3].

A European diplomat in Bangkok is bitten by a green snake on his foot while walking in the garden of his residence. There were two fang marks and he experienced immediate pain at the bite site. He is seen by the embassy's nurse who injects intravenously several ampoules of Thai Red Cross Institute's anti trimeraserus, Russells' viper, Malayan pit viper, and cobra monovalent equine origin antivenins. There is no immediate reaction and he develops moderate skin

ulceration and swelling of his leg which subsides after one week. Seven days later, he develops severe serum sickness with fever, rash and joint swelling which requires hospitalization and corticosteroid therapy to which he responds within another two weeks. Observation after the bite, updating his tetanus immunization, elevation of his leg and analgesics with surgical consultation if severe ulceration had developed would have been appropriate treatment in this case. There was no indication to give him cobra ,Russell's and pit viper antisera as the physical description of the snake by an intelligent patient excluded these snakes as the aggressor and green pit viper snake bites are best treated conservatively.

A Thai soldier rides his motorcycle near the old airport in a grassy area late in the evening. His front tire develops a leak and he stops and puts his feet on the ground when an unseen snake bites him in his calf. It hurts and he proceeds to a nearby military clinic. He is in stable condition other than for pain at the bite site. The fang marks are slightly inflamed and approximately 1.5 cm apart. The area is known as harboring Russell's vipers. An IV drip is started and the patient is observed for two hours without any adverse signs or symptoms other than some pain and swelling at the bite sit developing. He is discharged to his quarters nearby, and told to return in the morning. When he wakes up and urinates, he describes his urine as "looking like Coca Cola" and proceeds to a major medical center where his blood did not clot after prolonged observation in the emergency room. He is given 100 ml of Thai Red Cross Russell's viper antiserum IV and his new blood sample clotted after about two hours in a tube at his bedside. However, he required hospitalization and surgical debridement of a significant necrotic reaction at the bite site. Fortunately, no permanent renal damage develops. Russell's vipers often bite in a defensive mode without envenoming. The doctor, who examined him at the military hospital, should have observed him longer and assured himself that no coagulopathy was developing.

A 50 year old German tourist is delivered to the emergency room of a university hospital in Bangkok cyanotic and in severe respiratory distress. He is intubated and placed in the ICU. The man delivering

him is from a local tourist hotel and stated that the patient told him with difficulty that he was bitten by a cobra. He had called for help from his hotel room but was not able to communicate more and started to gasp for air. He was given 200 mL of Siamese cobra antivenin and when he was extubated two days later and a German speaker obtained more history, it was learned that he was on his way back to his hotel but stopped nearby in a grassy area to have a smoke and look around. There was motion in the grass and he bent down to part it and see what there was. He recognized a cobra with expanded hood just as he was bitten on his hand. He then went to his hotel room to get his passport, planning to proceed to a hospital, but developed double vision and weakness so he called room service and could only show his hand and say cobra. The hotel staff took him immediately to the hospital and thought that he had procured a cobra some place and was bitten in his room with the cobra hiding there. They evacuated the entire floor and started to look at air-conditioning ducts to find the cobra. Needless they were greatly relieved when told the real story.

A pickup truck arrives in front of the university hospital emergency room and staff see a district nurse with "ambu bag" and a Thai farmer with airway being bagged by her lying in back of the open truck. He had been bitten by a Siamese cobra in his rice field near the new Bangkok airport and developed apnea soon thereafter. The district nurse bagged him successfully for at least two hours travel time to Bangkok. He was immediately intubated and placed on a respirator and given Thai Red Cross cobra antivenin. He made a complete recovery other than having lost two fingers due to necrosis from the venom. This is an example of good judgment and appropriate action by the well trained and resourceful nurse. Also an example that showed that specific antivenin does not neutralize venom fixed to motor endplates, only circulating vein is neutralized. Respiratory help is essential.

Victims with paralytic venoms (mostly cobras, Kraits, and some sea snakes) can be saved even without antivenins but with respiratory support [4]. Hemolysis and bleeding in Russell's viper bites requires antivenin. Myotoxic pit viper victims need urgent surgical consultation and often circulatory support if severely envenomed. The toxins of several snake species, notably Russell's vipers from Thailand, India and Sri Lanka are usually antigenically different. The dose of antivenins from India, for example, will have to be significantly increased when used in Sri Lanka or Thailand. There is still need for more research and better education of health care staff concerning appropriate treatment protocols for snakebite cases. The paper by Rojnuckarin, et al. in this issue should be translated, reproduced and appropriately distributed in this region which mostly has the same species of snakes and public health threats.

References

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