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SURVEY ON DEATHS BY SNAKE BITES

Roopali Bhatnagar

Scientific leader: associate professor: Phd R. N. Protosovitskay

Educational Establishment
«Gomel State Medical University»
Gomel, Republic of Belarus

Introduction

Snake bite is a neglected public health problem in tropical and subtropical countries, where rural populations are mainly affected. It is a common occupational hazard mainly in farmers, plantation workers, herders and laborers leading to significant morbidity and mortality that remains largely unreported. The most affected region in the world is South East Asia because of dense population and extensive agricultural practices. The According to the World Health Organization (WHO) has included snake bite in its list of neglected tropical conditions in 2009.

Aim

To know about the statistics about deaths caused by snake bites.

Material and methods

The analysis and generalization of modern medical scientific literature on this topic.

Research results and discussion

WHO around five million snake bites occur each year, although venom is only injected in just over half of cases. From blindness to amputations, hundreds of thousands of people are left with permanent disability after being attacked by snakes. The WHO describes such cases as among the most neglected tropical diseases. The majority of snake bites take place in densely populated areas of sub-Saharan Africa, South Asia and South-East Asia, where humans and snakes often come into contact.

Poor, rural populations are at particular risk from snake bites, as they often lack access to antidotes or may turn to traditional treatments in the absence of modern medical facilities. Many of the worst affected countries do not have their own facilities for producing antivenoms, which must be quickly administered to prevent or halt the damage caused by toxins.

The World Health Assembly's new resolution will ensure that countries follow a common strategy in the prevention, treatment and management of snake attacks. Half of the snake bite deaths happen in India. Foremost is the problem of inaccurate data. Right now, there is no official system which can give an exact figure of snakebite casualties every year. The government itself is unsure about the numbers (see «Huge gaps»). Responding to a query in the Lok Sabha in March, 2015, Union Minister for Health and Family Welfare J P Nadda said that around 1,123 people had died in 2013 due to snakebite while 1,008 had died in 2014. In sharp contrast, a study published by experts, including noted herpetologist Romulus Whitaker, in the PLOS Neglected Tropical Disease journal in 2011 has estimated that deaths due to snakebite could be between 45,900 to 50,900 in India every year. «It might be even higher, around 100,000», says P Gowri Shankar, founder director of the Kalinga Centre for Rainforest Ecology in Karnataka's Agumbe, who focuses primarily on studying King Cobras.

According to another study the difficulty of treating snakebites starts with identifying the biting reptile. This is vital, since venom composition differs vastly between snake species. India has around 60 different species of poisonous snakes but most fatalities are caused by the 'Big Four' — the spectacled cobra (*Naja naja*), the common krait (*Bungarus caeruleus*), the saw-scaled viper (*Echiscarinatus*) and Russel's viper (*Daboiarusselii*). Of the 300,000 snakebites reported in India there is no envenomation in 70 per cent of cases. This does not make it any easier for doctors who must decide within a rapidly closing window on whether to administer the standard polyvalent antivenom, which carries the risk of severe allergic reaction, says Nishigandha Naik, director of the state-run Haffkine Institute, established in Mumbai in 1899 to conduct research in medical biotechnology.

Ecological and environmental factors, gender, age, temperature, and prey/predators govern snake venom composition and activity. The bite of a krait or cobra leads to local swelling and blisters, ultimately causing a symptom called wet gangrene, where the affected body part is closed off from the blood stream and begins to rot. The venom acts on the nervous system, resulting in paralysis of the face, eyes, tongue, and neck. Death often comes from respiratory failure. Viper venom, on the other hand, affects the blood vessels directly and causes dry gangrene, where tissue dries up and often falls off. The venom also results in kidney failure, leading to death if not treated rapidly. The quantity of venom delivered into the body also differs with species – the krait injects about 20 milligrams of venom, while the Indian cobra is capable of pumping in thrice that amount. India is one of the few countries with the capacity to both extract venom and process it to make antivenom. This is fortunate, because across the world manufacturers are ceasing production, due to a global lack of demand. This has made antivenom costly for poor countries [2].

According to the WHO, antivenom availability has declined significantly or even disappeared in many countries. About 85 per cent of the venom needed for producing antivenom in India is extracted by the Irula Snake-catchers Industrial Cooperative Society in Chennai, South India. Composition of venom of a single species can vary greatly according to location and the snake's habitat.

The World Health Organization advises the use of the Australian Pressure Immobilization Bandage (PIB) method only for neurotoxic snake bites, which do not cause swelling. It is also important not to try to handle or capture a potentially venomous snake. Even dead snakes should be handled with caution, as the nervous system of recently killed specimens may still be active and can deliver a venomous bite.

The statistics given by independent researchers and government estimates are poles apart. 50,000 total snake bites in India according to 2005 data which was studied but, 1064 snakebites death as per 2016 government estimates. But according to government estimates shown of 2016 deaths in states were as Rajasthan 34; Madhya Pradesh 113; Gujrat 72; Maharashtra 67; Karnataka 43; Uttar Pradesh 116; Bihar 11; Chhattisgarh 62; Tamil Nadu 46; West bangal 138; Jharkhand 15; Odisha 120. Beside this if we calculate overall India is reported to have highest number of snake bite 81,000 and 11,000 deaths per year [1]. While according to WHO in India it has been estimated that as many as 2.8 million people are bitten by snakes, and 46,900 people die from snake bite every year. Snake bite is a common medical emergency where timely treatment can reduce mortality and save precious human lives. The reasons of death are lack of proper information, poor health care services, lack of antivenom, improper transportation, and corruption in production of antivenom like selling the diluted antivenom to make money. These things should be stopped and every person should have proper information, and antivenoms that only can decrease snake bite deaths [3].

Conclusion

Snake bite should be declared a notifiable disease. A National policy should be formulated and implemented to ensure prompt availability and effective use of ASV in the rural areas of

the country. Training of treating physicians and knowledge of protocols to deal with emergencies should be mandatory and Government should ensure availability of ASV. However, development of species specific ASV is an enormous challenge because of species diversity in India.

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MALARIA DIAGNOSIS BY REVEALED INFECTIONS BY *PLASMODIUM FALCIPARUM* AND *P. VIVAX* IN INDIA

Sanket Sasankar

Scientific leader: associate professor, Phd *R. N. Protosovitskay*

Educational Establishment
«Gomel State Medical University»
Gomel, Republic of Belarus

Introduction

Malaria is a life-threatening disease caused by parasites that are transmitted to people through the bites of infected female *Anopheles* mosquitoes. In 2017, there were an estimated 219 million cases of malaria in 90 countries. Malaria deaths reached 435 000 in 2017. The WHO African Region carries a disproportionately high share of the global malaria burden. In 2017, the region was home to 92 % of malaria cases and 93 % of malaria deaths. Malaria is caused by *Plasmodium* (*P.*) parasites. The parasites are spread to people through the bites of infected female *Anopheles* mosquitoes, called «malaria vectors». There are 5 parasite species that cause malaria in humans, and 2 of these species — *P. falciparum* and *P. vivax* — pose the greatest threat [4].

In 2017, *P. falciparum* accounted for 99.7 % of estimated malaria cases in the World Health Organization (WHO) African Region, as well as in the majority of cases in the WHO regions of South-East Asia (62.8 %), the Eastern Mediterranean (69 %) and the Western Pacific (71.9 %). *P. vivax* is the predominant parasite in the WHO Region of the Americas, representing 74.1 % of malaria cases.

Global malaria incidences have increased by five million in 2016 and mortality remains almost similar, as reported by the World Health Organization (WHO) in 2015. Moreover, India ranks third with respect to total malaria burden in the world and ranks first (51 %) when it comes to global *P. vivax* incidences. One of the major reasons for endemicity of malaria is complex interactions among the pathogen, vector and host, influenced by local environmental determinants. Malaria therefore is considered to be a strictly local and focal disease. Furthermore, malaria is unique among other vector borne diseases with respect to pathogens; wherein five different species of *P.* have been identified to cause malaria in humans. Therefore, to understand malaria epidemiology in a particular endemic location, there is a need to unravel the actual incidences of infection by different species of *P.* using a more sensitive diagnostic method (*e.g.* PCR assay, see below). This is especially useful in a country where more than one species of *P.* is responsible for malaria havoc (*e.g.* India) [1].