



SNAKE BITES: Danger that lies inside the body

By Jayshika Murti 98049164

The fear of snakes is a powerful, primordial and possibly native human emotion that has fascinated experimental psychologists and evolutionists (D.Warrel 2010). Australia has over 140 species of snakes and is found to be the home for many dangerous snakes like taipans, brown snakes, tiger snakes and black snakes.

Most snake bites occur when people try to kill, aggravate or capture them. This is because the snake may have been surprised, cornered or felt threatened. Most snakes try to avoid confrontation and they often give warnings before striking by flattening neck muscles, hissing and making mock attacks.

There are 2 types of snake bites

Dry bites

A dry bite is when the snake attacks but no venom was injected into the body. Dry bites are painful and like any other bites, it can cause swelling and redness. People usually can't tell that the bite was a dry bite that is why it's better to ask for medical treatment.

Envenomation

This is where the venom of the snake is being released into the body by snake bite. Snake venom contains presynaptic and postsynaptic neurotoxins. These are toxins that interact with the nerve cells, causing paralysis and muscle weakness which can lead to potential death.

General Symptoms

- Headache
- Nausea or vomiting
- Abdominal pain
- Muscle weakness
- Paralysis

When a snake bite occurs, there is a sequence of systemic development in which the venom gets spread into the body.

- In less than 1hr symptoms like headaches, irritability, vomiting shows. This leads to abrupt hypertension and therefore the loss of consciousness.
- Between 1-3 hours there is cranial nerve paralysis which leads to abdominal pain, tachycardia and haemorrhage.
- After 3 hours, there is paralysis of the limb and respiratory muscle leading to respiratory failure and eventually death.

Treatment- Antivenoms

What are they?

A purified fraction of immunoglobulins or immunoglobulin fragments fractionated from the plasma of animals that have been immunized against a snake venom or a snake venom mixture. (WHO 2010).

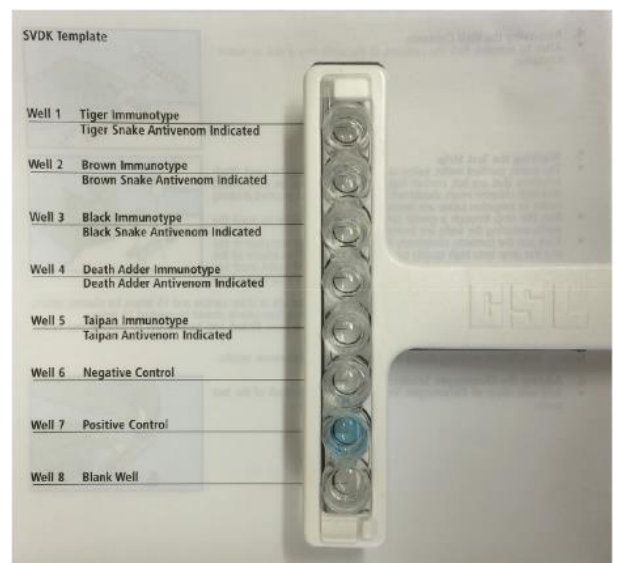
Antivenoms are only to be used when patients show signs venom spreading in their body. It is important to be given the right antivenom to decrease the risk of anaphylaxis (an acute allergic reaction to an antigen: (ASCIA 2017)). There is no weight based calculation for antivenom, this is because snakes deliver roughly the same amount of venom regardless of the size of the patient. One vial of antivenom is enough for an average child and adult. This is enough dosage to neutralise the venom that has been supplied by one snake.

Snake Venom Detection Kits are designed to aid in determining the right antivenom to use for envenomed individuals. These kits can be useful however inexperienced people may misuse these kits leading to snake misidentification and having false positive and negative readings.

What is the first aid treatment for snake bites?

Firstly it is important to take note of the snake's characteristics for the sake of getting medically treated by an antivenom.

- Do not wash the infected area or suck out venom. This is because of the venom identification kits, it's important to retain a sample of the venom to discover the right antivenom
- Do not cut open the bite or use a high tourniquet. Cutting the bite leaves the area more infected with other foreign molecules and applying a tourniquet can suppress the blood flow which may lead to numbing of the body.
- The lymphatic system is responsible for systemic spread of venoms (K. Sutherland 2017). The best way to suppress lymphatic spread is to use a pressure immobilisation bandage. Place a folded pad over the bitten area then bandage over the infected site ensuring the pressure of the bandage is firm and then extend towards the central parts of the body to delay the spread of the venom. The bandage is used to minimise limb movement, is safe to use and does not cause iatrogenic tissue damage (medical disorder caused by diagnosis).
- Once bandage has been attached, it's important not to move the body to decrease the spread of the venom in the lymphatic system and immediately call for medical treatment.



References

- Australasian Society of Clinical Immunology and Allergy (ASCIA). 2017. Anaphylaxis - Australasian Society of Clinical Immunology and Allergy (ASCIA). [ONLINE] Available at: <<https://www.allergy.org.au/patients/about-allergy/anaphylaxis>>
- Burke's Backyard. 2017. Snake Bites - Burke's Backyard. [ONLINE] Available at: <<http://www.burkesbackyard.com.au/fact-sheets/conservation-the-environment/snake-bites/>>
- Clinical Practice Guidelines: Snakebite. 2017. Clinical Practice Guidelines: Snakebite. [ONLINE] Available at: <http://www.rch.org.au/clinicalguide/guideline_index/Snakebite/>
- Dictionary.com. 2017. Iatrogenic | Define Iatrogenic at Dictionary.com. [ONLINE] Available at: <<http://www.dictionary.com/browse/iatrogenic>>
- G.K.Isbister, S.G.A.Brown, C.B.Page, D.L.McCoubrie, S.L.Greene, N.A.Buckley. 2017. Snakebite in Australia: a practical approach to diagnosis and treatment. The Medical Journal of Australia, [Online]. 199 (11), 763-768. Available at: <https://www-mja-com-au.ezproxy.lib.uts.edu.au/journal/2013/199/11/snakebite-australia-practical-approach-diagnosis-and-treatment?0=ip_login_no_cache%3Dc934780cb7a148732f154258ac51bb93>
- Healthdirect. 2015. Snake Bites. [ONLINE] Available at: <<https://www.healthdirect.gov.au/snake-bites>>
- J.M Guitierrez, B.Lomonte, G.Leon, A.Alape-Giron, M.Flores-Diaz, L.Sanz, Y.Angulo, J.J.Calvete. 2017. 2009. Journal of Proteomics, [Online]. 72 (Issue 2), 165-182. Available at: <http://ac.els-cdn.com.ezproxy.lib.uts.edu.au/S1874391909000128/1-s2.0-S1874391909000128-main.pdf?_tid=5ba1681e-46d4-11e7-97f9-00000aacb35f&acdnat=1496326534_f9f851c9b56844b11226d5031e70ab9b>
- Pharma Jogot. 2017. Industry News Archives | Page 4 of 5. [ONLINE] Available at: <<http://www.pharmajogot.com/category/news/industry-news/page/4/>>
- Research Gate. 2016. [ONLINE] Available at: <https://www.researchgate.net/figure/296634212_fig1_Fig-2-Negative-CSL-Snake-Venom-Detection-Kit-result-on-serum-obtained-from-the-dog>
- Treatment of Australian Snake Bites. 2017. Treatment of Australian Snake Bites. [ONLINE] Available at: <<http://www.anaesthesia.med.usyd.edu.au/resources/venom/snakebite.html>>
- Warrel, D.A, 2010. Snake Bite. Lancet 2010, [Online]. 375, 377-378. Available at: <<http://www.sciencedirect.com.ezproxy.lib.uts.edu.au/science/article/pii/S0140673609617542>>
- WHO (World Health Organisation). 2017. Snake Antivenom Immunoglobulins. [ONLINE] Available at: <http://www.who.int/bloodproducts/snake_antivenoms/snakeantivenomguideline.pdf>