a Envenomation due to black widow spider

A 38-year-old male patient presented to a tertiary hospital following a spider bite. The patient gave a history of experiencing a sharp pain at a particular spot on his right lower abdominal quadrant and on further inspection, noticed a large (15 mm) black spider which he was able to catch alive. Within minutes, he experienced intense local pain at the bite site. Over the next few hours he became progressively symptomatic, with intense muscle pain which spread gradually upwards to his trunk, arms and neck, severe flushing, sweating, and headache. Finally, he presented to a local tertiary hospital. On examination, he had a red, macular lesion at the presumed bite site which showed no puncture marks. He had a mild tachycardia and rigors. His blood pressure, temperature and neurological state were normal. He experienced no GIT symptoms. Bloods were normal apart from an elevated creatine kinase (1000 IU/l). The muscle pain and rigors were extremely difficult to control and the patient was treated using calcium gluconate infusions (providing only very short term relief), opiate and NSAID analgesia. In addition, corticosteroids and antihistamines were administered.

Fortunately the patient had retained the spider, which was identified as a mature female adult black button or black widow spider (*Latrodectus indistinctus*) (Figure 8). This spider typically has a distinguishing short red stripe down the back, along the midline and above the spinnerets. With age, however, the spider undergoes multiple moults and the red stripe disappears, resulting in an indistinct brownish-orange patch, and hence the name black button (for the 4 'button holes' on the dorsal aspect). The name 'black widow' derives from the cannibalistic behaviour of the female, who consumes the male after mating, a practice not uncommon with spiders.

The venom of the black widow is a complex collection of toxic agents containing latrotoxin. In large volumes latrotoxin may cause latrodectism – a syndrome of intense muscle pain, nausea and vomiting, flushing, rigors and sweating, headache and weakness. Latrotoxin acts on the presynaptic neural membrane and causes the release of massive amounts of the neurotransmitters norepinephrine, GABA and acetylcholine. This results in stimulation of the sympathetic nervous system and symptoms of latrodectism. The symptoms usually wax and wane over the next 1-4 days. In children, injection of large volumes of latrotoxin may result in neurological symptoms – decreased level of consciousness and seizures, and antivenom administration is required. In adults, because the volume of injected venom is small relative to the adult body volume, it is seldom necessary to use antivenom. In addition, a bite from *Latrodectus* may be 'dry' – no venom injected, while 75% of 'wet' bites will result in only localised pain.

While antivenom was sourced for this patient (it is produced by South African Vaccine Producers based at the NICD/NHLS campus), it was never administered. The antivenom is of equine extraction and has a high potential for anaphylactic and allergic type reactions. Further, the patient had a history of penicillin and sulphur allergies, suggesting he was at risk for anaphylaxis. If clinically indicated (deranged level of consciousness or haemodynamic instability), antivenom should only be administered in a high care/ ICU setting with appropriate life support equipment close at hand. After 48 hours of intense latrodectism symptoms, most disabling of which were severe muscle cramps, the patient made a rapid recovery and he was discharged home.

Source: Attending physician (kimroberg@yahoo.com), Division of Public Health, Surveillance and Response, NICD-NHLS (outbreak@nicd.ac.za); Centre for Emerging&Zoonotic Diseases (alank@nicd.ac.za)

A

B

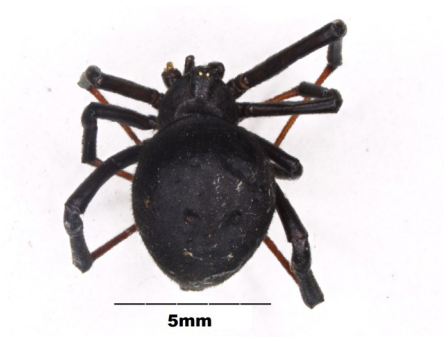

Figure 7. A photomicrograph of ventral (A) and dorsal view (B) of the black widow spider (*Latrodectus indistinctus*) implicated in the case described above.