ACCIDENTAL CONTAMINATION WITH BROWN SPIDER VENOM[1]

Kenneth N. Pinkston, D. E. Howell, and G. V. Odell

Department of Entomology and Department of Biochemistry, Oklahoma State University, Stillwater, Oklahoma

The sequelae of the bite of the brown spider (*Loxosceles reclusa*, Gertsch and Mulaik) are well known and have been documented in many publications. Many workers have experimentally introduced venom into laboratory animals with varied results depending on the species of animal. White mice have been shown to tolerate relatively large amounts regardless of the site of injection of the venom (1), while white rabbits are very sensitive (1-4). Domestic swine have been found to be only mildly affected by dermal or subdermal injections of venom (5). No reports of the consequences of introducing this spider venom into human tissue by accident with a contaminated instrument have been found. The following note records the results of such an occurrence.

While engaged in a research project on the morphology and cytology of the poison glands of the brown spider, *Loxosceles reclusa*, one of the authors (K.N.P.) accidentally introduced venom subdermally into his right middle finger. Venom introduced by the bite of the brown spider would normally be confined to the outer strata of the epidermis because the fangs are seldom more than 0.5 mm in length.

During August 1971, brown spider venom glands were being excised under a dissecting microscope. Following the removal of the venom glands from five female spiders, a pair of microforceps was accidentally dropped, and the tips penetrated the inner surface of the middle finger of the right hand. One tip of the forceps was forced deeply into the subcutaneous tissue of the second phalanx, approximately 4 mm beyond the proximal joint. The second tip of the forceps penetrated less deeply. The forceps was immediately extracted, and the finger was washed with soap and water and 70% ethanol poured over the wound area.

The tips of the forceps were known to be contaminated with venom because 10 glands had been removed with the forceps and deposited into various solutions before whole mounts of the venom glands were made. Two glands had been placed in 0.85% saline solution, two glands into 5% borax carmine and 10% formalin, two glands into Carnoy's fixative solution, and four glands into lactic acid. The forceps used to transfer the glands had been swirled in each solution in order to free the glands from the forceps. The last gland transferred before the accident had been placed in a saline solution. Thus, the forceps was known to be contaminated by both venom and the experimental solutions into which the glands were deposited.

A physician was consulted 21 hr after the accident because considerable redness, swelling and itching had developed. He gave a tetanus booster and directed that the finger be soaked in warm water (3 X daily). He prescribed an oral antibiotic, Cleasin (Upjohn Co., Kalamazoo, Mich.) 150 mg 4 X daily, an antihistamine, Benadryl (Parke Davis and Co., Detroit, Mich.) 50 mg 3 X daily, and topical application of Neo Medrol (Upjohn Co.). After 32 hr, swelling and itching had increased and the digit could not be flexed. Erythema had spread to the base of the two adjacent phalanges, down the palm of the hand, and around the knuckle of the middle finger. Approximately 34 hr after the injection, the swelling and pain were so intense that emergency treatment was necessary. The physician on call in the emergency ward administered 2 cc of Depo Medrol (Upjohn Co.) by intramuscular injection into the right shoulder. Examination by a physician 42 hr after the contamination indicated that some infection was present. He advised soaking the hand in warm water three or four times daily and prescribed penicillin and

[1] Journal article P-69 of the Agricultural Experiment Station, Oklahoma State University, Stillwater, Oklahoma.

Depo Medrol tablets. With the prescription of these medications, the taking of Cleasin and Benadryl capsules was discontinued.

Swelling, itching, and moderate pain persisted for 11 days after the accident. On the tenth day following the accident, desquamation of the middle finger began and was completed by the fourteenth day. No typical necrotic lesion resulted.

ACKNOWLEDGMENTS

This work was supported in part by Department of Health, Education and Welfare grant FD-00146.

REFERENCES

1. R. H. GROTHAUS, *The Toxicity of Oklahoma Spider (Araneae) Venoms Using New Venom Recovery and Testing Technique*, Ph.D. Dissertation, Oklahoma State University, Stillwater, 1967.
2. M. E. MACKINNON and J. WITKIND, Ann. Fac. Med. Montevideo 38: 75-100 (Abstr.), (1953).
3. J. A. ATKINS, C. W. WINGO, W. A. SODEMAN, and J. E. FLYNN, Amer. J. Trop. Med. Hyg. 7: 165-184 (1958).
4. D. W. MICKS and C. W. SMITH, Bull. Entomol. Soc. Amer. 9: 174 (1963).
5. R. V. PETERSON, *The Toxicity, Hemolytic Activity, and Protein Components of the Venom from Certain Spiders of the Family Lycosidae (Araneae)*. Ph.D. Dissertation, Oklahoma State University, Stillwater, 1970.