recessive (Scott, Bryant and Graham 1971).

In contrast, other probably less often reported cases of syndactyly occur in which only surgically-correctable extremities are affected. Thurmon (1974) recognized four types of such syndactyly, all the result of autosomal dominants, but differing according to: (1) which fingers or toes are involved, (2) fusion of metacarpals, metatarsals or phalanges, and (3) presence of extra fingers. Syndactyly Type II, synpolydactyly, is characterized by "webbing between fingers 3 and 4 with polydactyly of part or all of fingers 4 included in the web, webbing between toes 4 and 5 with polydactyly of all or part of toe 5 included in the web."

A Case Report

Four generations of a Tennessee family exhibiting polydactyly Type II, or synpolydactyly are shown in Fig. 1. From the pedigree it can be noted that: (1) The condition never occurs in an individual unless one of the parents was also affected; (2) When either parent is affected, the condition occurs in approximately one-half of the children (collectively, 8 out of 14); (3) The male: female ratio is 5:4.

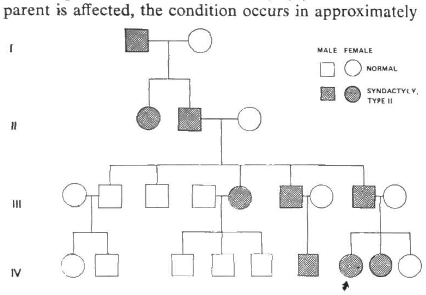

FIG. 1. *A family history of polydactyly, Type II. Arrow indicates informant.*

Not shown by the chart are various degrees and modes of expression of the trait. From information obtained from the informant, it appears that none of the nine individuals were affected in exactly the same way. In most, but not all, cases both hands and both feet were involved, but the exact fingers and/or toes affected varied considerably. Most of the affected individuals of generations III and IV have had corrective surgery.

Discussion

The method of transmission of polydactyly Type II as outlined above can be accounted for by the assumption that the trait is due to a single, dominant autosomal gene with variable expressivity. Thus, the method of determination is generally consistent with other such reports as summarized by Cross, Lederberg, and McKusick (1968).

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Dr. Philip Mathis of the biology department of Middle Tenn. State University critically reviewed the manuscript. Publication costs were borne by the Faculty Research Committee of Middle Tenn. State University.

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TOXICITY OF FRESH VENOM FROM TIMBER RATTLESNAKES *(CROTALUS HORRIDUS HORRIDUS)* AND COPPERHEADS *(AGKISTRODON CONTORTRIX MOKESON)*

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Abstract

Fresh venom from the timber rattlesnake, *Crotalus horridus horridus* Linné, and the copperhead, *Agkistrodon contortrix mokeson* Daudin, was used to determine an intramuscular LD-50. Swiss-Webster, C_3H, and pet store mice were used as test animals.

Introduction

During late March and April five timber rattlesnakes and three copperheads were collected near den sites on the North Carolina side of Unaka Mountain. All specimens were healthy and ate well in captivity. The average leng'h for the timber rattlesnake was 42 inches, while the average length for the copperheads was 22 inches.

A specially built cage, 2x2x6 ft., landscaped to their natural habitat, housed these reptiles. The temperature was maintained at 21°C±3°. Also, a 12 hour day and night cycle was established. The snakes tolerated their seven month captivity well.

During this time we observed and photographed many areas of their behavior including the following:

defensive mechanisms, molting, drinking, hunting, striking, eating and birth of 36 copperheads and 4 timber rattlesnakes. (In July four gravid female copperheads and one gravid timber rattlesnake were collected.)

Materials and Methods

Each of the rattlesnakes was milked approximately three times over a period of seven months and each copperhead was milked approximately twice during the same period. A 30cc beaker, covered with thin dental dam latex, was used to collect the venom. With the reptile grasped behind the head, it was allowed to bite into the beaker. The amount of venom collected was entirely dependent upon the snake, as no external pressure was applied to the venom glands. The latex covering helped to protect the delicate fang sheath as well as provide a small resistance, simulating an actual bite. Most of the snakes responded eagerly and provided more than enough venom.

The venom was immediately aspirated into a micro liter syringe for accurate measurement. It was then mixed in a test tube with a calculated amount of distilled water. This provided the proper dilution factor which was injected individually into the test animals on a mg/kg basis. The dilution factor for the timber rattlesnake venom was 1:500 and for the copperhead venom, a dilution factor of 1:100 was used. A wet weight dosage was used since the specific density of the venom was so close to that of water. Specific density of both venoms was 1.1.

The mice were all weighed individually and the mean weight was 20 grams. Using a micro liter syringe with a 25 guage needle, the mice were injected intramuscularly into the left gastrocnemius and semimembranosus. Five test animals and one control were used at each dose level. The control was injected with distilled water on the exact mg/kg dose as the previous five animals. All deaths occurring within a 72-hour period following injection were ascribed to the effects of the venom (Minton, 1953). A total of 200 mice were used in this study.

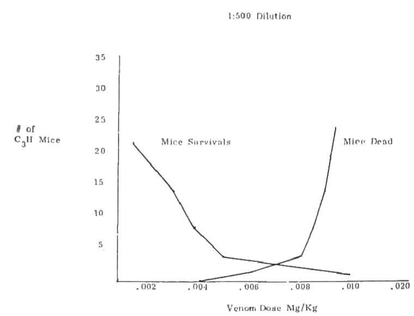

FIG. 1. *Timber Rattlesnake—Accumulation of Deaths and Survivals.*

Results

The LD-50 was calculated by the Reed and Muench (1938) Method. Data for timber rattlesnakes and copperhead venoms tested on C_3H mice are presented in Figures 1 and 2. The 50 per cent mortality is at the point of intersection. Swiss-Webster and pet store mice were used also to test timber rattlesnake venom but not presented in graph form since the results were very similar to C_3H data.

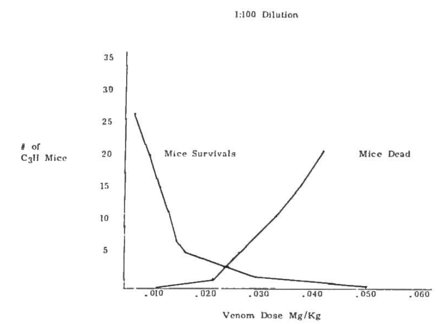

FIG. 2. *Copperhead—Accumulation of Deaths and Survivals.*

Conclusion and Summary

The I. M. LD-50 using fresh venom from *Crotalus horridus horridus* in C_3H mice was .007 mg/kg, in Swiss-Webster mice .006 mg/kg, and in pet store mice was .009 mg/kg. The mean LD-50 was .00733 mg/kg. Fresh venom from *Agkistrodon contortrix mokeson* produced an I. M. LD-50 of .024 mg/kg in C_3H mice. The rattlesnake clearly demonstrated a more potent venom than did the copperhead.

It is our belief that LD-50 results using fresh venom, as compared to using reconstituted freeze dried venom (Glenn and Straight, 1977) is a more accurate evaluation of venom potency.

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