Syndactyly of the Ring and Little Finger

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A PREVIOUS investigation of anomalies of the hands and feet included a section on various types of syndactyly (Johnston and Davis, 1953) but no case of syndactyly of the ring and little fingers was included.

Bell (1931) described syndactyly of the fourth and fifth fingers in each hand with bony fusion in the terminal phalanx only, and with the middle phalanx of the little finger being very short or absent. Complete syndactyly of the ring and little fingers on both hands of a family was reported by Collette (1954). The condition arose as a mutation in the propositus, and its inheritance is probably due to a dominant gene.

The propositus of the family reported here lives in a near-by town. An interview with the man revealing syndactyly of the ring and little fingers produced the pedigree. In the pedigree (figure 1) the grandfather I-1 of the propositus, III-19, was the first known individual to show syndactyly, but the manner of expression is not known.

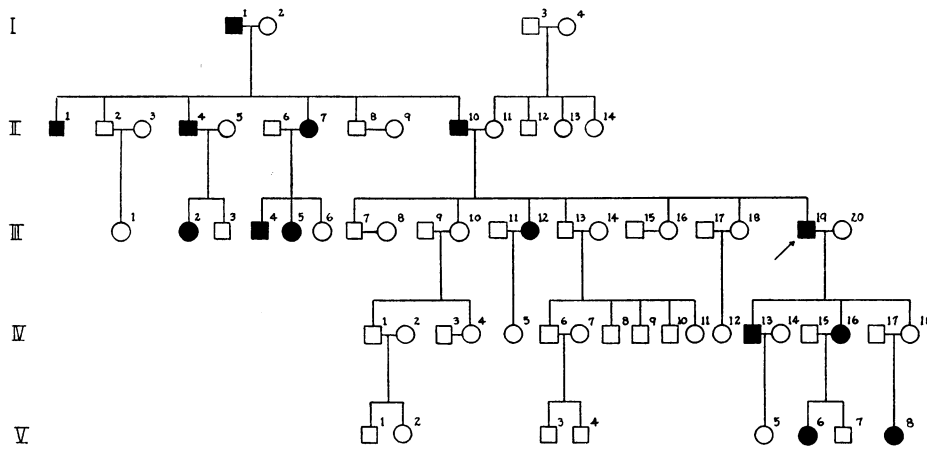

FIG. 1. A five generation pedigree of a family showing syndactyly of the ring and little fingers.

The propositus shows complete syndactyly of fingers four and five (plates 1 and 2). Finger four of each hand is flexed dorsally and abducted toward finger five. The nails of the syndactylous fingers on both hands are fused medially except near the beds, indicating that they were of separate origin. The x-ray photographs, plates 3 and 4, show the absence of phalanx two in both the right and left fifth fingers, and fingers four and five of each hand show only fleshy fusion.

Of the remaining descendants of I-1 who show syndactyly, there are four varia-

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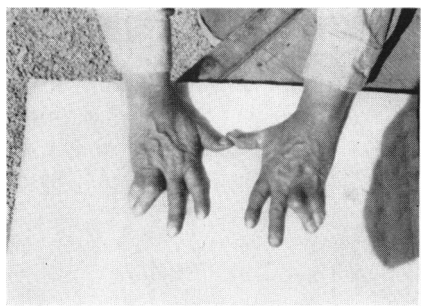

PLATE 1

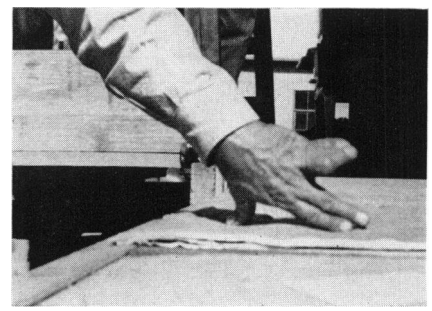

PLATE 2

PLATE 1. Dorsal view of the hands of the propositus, III-19, showing complete syndactyly of the ring and little fingers.

PLATE 2. View of left hand of propositus showing flexion and abduction of the ring finger.

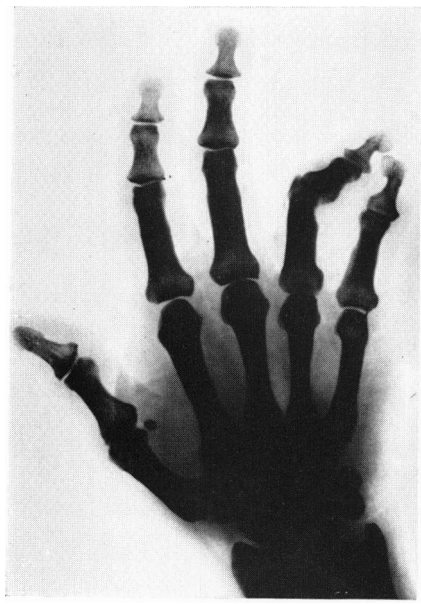

PLATE 3

PLATE 4

PLATE 3. X-ray photograph of right hand of propositus, III-19; dorsal view.

PLATE 4. X-ray of left hand of propositus, III-19; dorsal view.

tions. The partial fusion of the proximal half of the fourth and fifth fingers of the left hand only occurs more often in females than in males. Three males, II-1, II-4, and II-10, expressed the anomaly by partial syndactyly of the fourth and fifth fingers of both hands, with the distal ends of the fingers separated. One male, III-4, and two females, II-7 and III-12, demonstrated syndactyly of the fourth and fifth fingers of both hands with the fourth finger flexed dorsally and towards the fifth finger. The extreme variation was represented in a female, V-6, by complete syndactyly of the third, fourth, and fifth fingers of the right hand, and complete syndactyly of the

fourth and fifth fingers and partial syndactyly of the proximal half of the third and fourth fingers of the left hand.

A son, IV-13, of the propositus had syndactyly accompanied by a rudimentary middle phalanx of the fifth finger of each hand. It appears that shortened or missing phalanges are associated with the anomaly. These findings are in agreement with those of Bell: that rudimentary phalanges may accompany and complicate syndactyly.

A female, V-8, showed the anomaly when neither parent showed it, but the maternal grandfather, III-19, had syndactyly of the fourth and fifth fingers.

The syndactylous condition of the fingers did not interfere with the use of the hands. Fingers of II-4 were separated surgically, but became useless after separation, and the man later had the separated fingers amputated for they interfered with the use of his hands. The result of the surgery seems to indicate that while the bones of the syndactylous fingers were separate they were controlled by the same group of muscles.

The pedigree of the family presented suggests that syndactyly of the fourth and fifth fingers is transmitted as an autosomal dominant gene with incomplete penetrance and varying expressivity.

The inheritance of syndactyly reported by Collette showed complete fusion between the ring and little finger of each hand, with no variation. The conclusion reached was that the anomaly is probably due to an autosomal dominant gene.

SUMMARY

In the five-generation pedigree syndactyly appears to be inherited as a simple dominant autosomal gene with incomplete penetrance and variation in expression. The pedigree of the family studied adds additional evidence of the inheritance of syndactyly of the ring and little fingers. Missing or rudimentary middle phalanges of the fifth finger appear to be associated with the anomaly.

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